RESOLUTION NO. 2024-070

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF ELK GROVE AMENDING OF THE BICYCLE, PEDESTRIAN, AND TRAILS MASTER PLAN AND APPROVING A CONDITIONAL USE PERMIT, TENTATIVE SUBDIVISION MAP WITH SUBDIVISION DESIGN REVIEW, DISTRICT DEVELOPMENT PLAN, LEVEL 1 DESIGN REVIEW, AND AN ART PLAN, AND MAKING A DETERMINATION OF CONSISTENCY WITH THE GENERAL PLAN FOR LISTING IN THE CITY'S CAPITAL IMPROVEMENT PROGRAM FOR THE NEW ZOO AT ELK GROVE PROJECT

WHEREAS, on September 23, 2021, the City of Elk Grove (City) and Sacramento Zoological Society (the Society) entered into an Exclusive Negotiating Agreement (ENA) to explore development of a zoological park in Elk Grove; and

WHEREAS, on March 23, 2022, the City Council received a Feasibility Study describing the potential construction and operating characteristics for a potential New Zoo in Elk Grove (the Project); and

WHEREAS, the City Council directed staff to prepare a Memorandum of Understanding (MOU) with the Society regarding master planning and environmental review for a Zoo in Elk Grove; AND

WHEREAS, on May 25, 2022, the City Council and the Society entered into that MOU, which provided a process for the development of schematic design plans, preparation of an Environmental Impact Report for the Project, and development of other information and materials, including a Finance Plan; and

WHEREAS, on April 8, 2022, the City acquired an approximately 103-acre property at the northwest corner of Kammerer Road and Lotz Parkway, more particularly described as APNs 132-0320-001, 002, & 010, which, pursuant to the terms of the MOU, has been identified as the "Candidate Site" for the Project; and

WHEREAS, pursuant to the terms of the MOU, the City retained the services of a qualified civil engineering firm to prepare conceptual and schematic design for off-site infrastructure services, and the Society retained the services of a qualified zoological park design firm (supplemented by other technical expert design firms), and that together these firms make up the Design Team for the Project; and

WHEREAS, the City and the Society have worked closely in partnership to develop a comprehensive, multiphase design plan for the proposed Project, including key components of an entry complex, animal habitats, guest facilities and amenities including dining and retail spaces, animal care center and holding areas, facility storage and warehousing, guest and employee parking facilities, and off-site infrastructure necessary to serve the Project; and

WHEREAS, during the course of the conceptual and schematic design, potential future acquisition of a Cosumnes Community Services District property at APN 132-2390-006 was identified as an opportunity for employee parking and, along with the Candidate Site, makes up the Project Site; and

WHEREAS, the City determined that the Project shall, pursuant to the terms of the City's Municipal Code, be treated as any other development application and is subject to entitlement requirements and other discretionary procedures provided in the Municipal Code; and

WHEREAS, City staff determined that the existing zoning and other development regulations present in the City's Municipal Code were insufficient to address the unique needs of the Project and worked with the Society and the Design Team to prepare a new Special Planning Area zoning document that would guide the entitlement, permitting, development standards, and development process for the Project; and

WHEREAS, public outreach and engagement is of critical importance to the City and, as such, the City prepare and executed an extensive public engagement plan, which included more than 30 workshops, popup events, and other meetings at various locations and times throughout the design process, including a dedicated event with the adjoining neighborhood in the summer of 2022, as well as community open houses in August 2022 and November 2023 and presentation at numerous community groups; and

WHEREAS, the City determined that the Project is subject to the California Environmental Quality Act; and

WHEREAS, the Planning Commission held a duly noticed public hearing on April 4, 2024, as required by law, to consider all of the information presented by staff, the Society, and the Design Team, as well as public testimony presented in writing and at the meeting and voted 5-0 to recommend approval of the Project to the City Council; and

WHEREAS, the City Council held a duly noticed public hearing on May 8, 2024, as required by law, to consider all of the information presented by staff, the Society, and the Design Team, as well as public testimony presented in writing and at the meeting;

NOW, THEREFORE, BE IT RESOLVED that the City Council of the City of Elk Grove hereby finds no further CEQA review is required based upon the following finding:

CEQA

Finding: An Environmental Impact Report has been prepared for the Project in accordance with the California Environmental Quality Act (CEQA) and it reflects the independent judgment and analysis of the City.

Evidence: Approval of the proposed New Zoo at Elk Grove Project requires an Environmental Impact Report (EIR). That EIR was certified by the City Council on May 8, 2024 by Resolution No. 2024-069.

The City prepared a Notice of Preparation (NOP) and circulated it to public agencies and interested parties (including the general public) on November 18, 2022. The NOP provided an introduction to the Project. Comments on the scope of the EIR were requested by January 13, 2023, consistent with the requirements of the State CEQA Guidelines. Comments received on the NOP are included in the Draft EIR (Appendix B of the Draft EIR) and responses are provided in Chapter 1 of the Draft EIR.

The Draft EIR has been prepared to meet the requirements of a project EIR as defined by Section 15161 of the State CEQA Guidelines. A project EIR focuses on the changes in the physical environment that would result from the implementation of a project, including its planning, construction, and operation. The State's intention is that a lead agency preparing a project EIR would not be required to provide further environmental analysis for additional regulatory approvals following approval of the project, absent conditions requiring a subsequent EIR, a supplement to the EIR, or an addendum. As such, the EIR has been prepared to address the potential environmental impact of all phases of the Project.

The Draft EIR identified a range of potential impacts resulting from approval of the Project. Some of these impacts are analyzed in comparison to existing Zoological Park in Land Park in Sacramento. The impact areas come from the State's CEQA guidelines (the CEQA Checklist).

The EIR has identified the following environmental issue areas as having potentially significant environmental impacts from implementation of the Project:

- Aesthetics
- Air Quality
- Biological Resources
- Cultural and Tribal Resources
- Energy
- Greenhouse Gas Emissions
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use
- Noise
- Public Services
- Transportation
- Utilities and Service Systems

Conclusions to the potential impacts are classified as either less than significant, less than significant after incorporation of mitigation measures, or significant and unavoidable. Significant and unavoidable impacts do not limit the City's ability to approve a project. Rather, given CEQA's role in providing disclosure of potential impacts, the City may approve a project with significant impacts that cannot be mitigated to a less than significant level. CEQA Guidelines Section 15093 states that "CEQA requires the [City] to balance, as applicable, the economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project against its unavoidable environmental risks when determining whether to approve the project. If the specific economic, legal, social, technological, or other benefits, including region-wide or statewide environmental benefits, of a proposed project outweigh the unavoidable adverse environmental effects, the adverse environmental effects may be considered 'acceptable.' When the [City] approves a project which will result in the occurrence of significant effects which are identified in the final EIR but are not avoided or substantially lessened, the [City] shall state in writing the specific reasons to support its action based on the final EIR and/or other information in the record. The statement of overriding considerations shall be supported by substantial evidence in the record." A statement of overriding considerations is necessary to approve the General Plan Update as two impacts, Greenhouse Gas Emissions and Transportation, remain significant and unavoidable after application of all feasible mitigation measures.

On January 5, 2024, the City released the Draft EIR. The Draft EIR was made available for public review and comment on the City's website, at City Hall, and at the Elk Grove library for a period of 45 days. Public comments on the Draft EIR were due

to the City on February 20, 2024. Comments were received from five agencies and 35 individuals on the content of the Draft EIR. Responses to these comments have been prepared by staff and are included in the Final EIR.

The Final EIR also includes an erratum of changes to the Draft EIR as a result of the public comments on the Project, the comments to the Draft EIR, and other revisions to the Project as identified by the City. The Final EIR indicates that the modifications to the Project are minor in nature and do not cause any change in significant impacts that were analyzed in the Draft EIR.

AND, BE IT FURTHER RESOLVED, that the City Council hereby approves an amendment to the Bicycle, Pedestrian, and Trails Master Plan, as described in Exhibit A (incorporated herein by this reference), based upon the following finding:

Finding: That the proposed amendment to the Bicycle, Pedestrian, and Trails Master Plan is consistent with the goals, policies, and objectives of the General Plan.

Evidence: The proposed amendment to the Bicycle, Pedestrian, and Trails Master Plan implements the alignment of pedestrian and trail facilities around the Project site, including along the Shed C Channel, Lotz Parkway, B Drive, and Classical Way, consistent with the General Plan's Transportation Plan, as illustrated in Figures 3-6 and 3-7 of the General Plan.

AND, BE IT FURTHER RESOLVED, that the City Council hereby approves the Conditional Use Permit, Tentative Subdivision Map with Subdivision Design Review, District Development Plan, and Level 1 Design Review for the Project, as described in Exhibit B and illustrated in Exhibit C, and subject to the conditions of approval in Exhibit D (all incorporated herein by this reference), based upon the following findings.

Conditional Use Permit

Finding #1: The proposed use is consistent with the General Plan and all applicable provisions of Title 23 (Zoning) of the City's Municipal Code.

Evidence: The proposed Zoological Park is consistent with the General Plan. The Vision Statement provides that Elk Grove is "great place to make a home, a great place to work, and a great place to play" and describes the community as being "family-oriented" and plentiful in parks. General Plan Goal RC-1 notes that "Elk Grove aims to become a center within the larger region, providing opportunities for employment, recreation, education, retail, industry, and residential development. This objective aligns with regional goals for economic development, sustainability and resiliency, and quality of life." Accompanying policy RC-1-3 provides that Elk Grove should invest in public infrastructure, including developing "great public spaces including urban plazas and parks, and adequate community services." Policy CIF-5-1 provides that "community facilities should be planned and designed to provide services and programs available for residents." The proposed Zoological Park implements the General Plan Vision and the noted goal and policies as it provides for a family-oriented activity in a park-like environment and expands the range of community services and amenities. It also furthers objectives the City has to be a regional destination as noted in Goal RC-1.

Finding #2: The establishment, maintenance, or operation of the use applied for will not, under the circumstances of the particular case (location, size, design, and operating characteristics), be detrimental to the health, safety, peace, morals, comfort, or general welfare of persons residing or working in the neighborhood of such use, or the general welfare of the City.

Evidence: The proposed location is ideal for the Project as it is along the major roadway of Kammerer Road, with access today to State Route 99 and, in the future, Interstate 5. This level of access is ideal for both local and regional users to access the site. Roadways and parking facilities are designed for easy access from Kammerer Road, with logical movements and ample signage to direct visitors to the site. The Project scale is designed to provide for the long-term operation of the Project, with ample space to grow the facility in the future. The design includes extensive containment systems and security features, including exterior walls and fences, animal holding areas, and habitat containment, consistent with the requirements of the US Department of Agriculture (USDA) for wild animal holding and the standards of the Association of Zoos and Aquariums. Additional security features include security cameras, lighting, and public address systems. The operator is required to maintain USDA permits and accreditation of the facility for the life of the operation, and to coordinate with City Police and Cosumnes Community Services District Fire Department on training for emergency events. Light and noise from the Project has been analyzed and given the nature of the Project, and as conditioned, these components will not be an impact to nearby uses, as described in the Environmental Impact Report. As such, the proposed use will not be detrimental to the health, safety, peace, morals, comfort, and general welfare of the public and those in the immediate area.

Tentative Subdivision Map

Finding: None of the findings (a) through (g) below in Section 66474 of the California Government Code that require a City to deny approval of a tentative map apply to this project.

a. That the proposed map is not consistent with applicable general and specific plans as specified in Section 65451.
b. That the design or improvement of the proposed subdivision is not consistent with applicable general and specific plans.
c. That the site is not physically suitable for the type of development.
d. That the site is not physically suitable for the proposed density of development.
e. That the design of the subdivision or the proposed improvements is likely to cause substantial environmental damage or substantially and avoidably injure fish or wildlife or their habitat.
f. That the design of the subdivision or type of improvements is likely to cause serious public health problems.
g. That the design of the subdivision or type of improvements will conflict with easements acquired by the public at large, for access through or use of, property within the proposed subdivision.

Evidence:

a. The proposed map is consistent with the General Plan as it provides for the extension of the public street system consistent with the Circulation Plan and the Roadway Sizing Diagram. Right-of-way set-asides are provided along roadways, lots are established for drainage facilities, and
b. The design of the proposed subdivision is consistent with the provisions of the General Plan and the Zoological Park Special Planning Area relative to street configurations and roadway cross sections, along with the proposed utility corridors and drainage infrastructure.
c. The Project site is physically suitable to the type of development proposed. There are no major grading issues, access limitations, or other factors that would restrict the proposed land division.
d. The Project site is physically suitable for the proposed density of development, as it is of sufficient size for the proposed activity and has access to major transportation corridors to facilitate the movement of people and goods to and from the site.
e. The design of the proposed Project will not cause substantial environmental damage or impact fish or wildlife or their habitat as evidenced in the Project Environmental Impact Report.
f. The design of the Project subdivision is not likely to impact public health and safety. There is adequate access to and from the site, with multiple points of emergency ingress and egress.
g. The proposed Project will not conflict with an easement for public access. Existing access rights for widening of Kammerer Road along the Project frontage were previously acquired by the City. The Project includes set aside of right-of-way for the extension of Classical Way across the site and extension of B Street from the Souza Dairy subdivision project from the north to Kammerer Road. Existing easements are proposed for abandonment and are no longer necessary, as they will be replaced with new easements for utilities parallel to the public street system or as otherwise coordinated with the utility providers, as noted in the Project conditions of approval.

Subdivision Design Review

Finding #1: The proposed Project is consistent with the objectives of the General Plan, complies with applicable zoning regulations, Specific Plan provisions, Special Planning Area provisions, and Citywide Design Guidelines adopted by the City.

Evidence #1: The proposed Zoological Park is consistent with the General Plan. The Vision Statement provides that Elk Grove is "great place to make a home, a great place to work, and a great place to play" and describes the community as being "family-oriented" and plentiful in parks. General Plan Goal RC-1 notes that "Elk Grove aims to become a center within the larger region, providing opportunities for employment, recreation, education, retail, industry, and residential development. This objective aligns with regional goals for economic development, sustainability and resiliency, and quality of life." Accompanying policy RC-1-3 provides that Elk Grove should invest in public infrastructure, including developing "great public spaces including urban plazas and parks, and adequate community services." Policy CIF-5-1 provides that "community facilities should be planned and designed to provide

services and programs available for residents." The proposed Zoological Park implements the General Plan Vision and the noted goal and policies as it provides for a family-oriented activity in a park-like environment and expands the range of community services and amenities. It also furthers objectives the City has to be a regional destination as noted in Goal RC-1

The design of the proposed Project is consistent with the development standards provided for in the Zoological Park Special Planning Area, including setbacks, building height, parking requirements, and other standards. Roadways are designed consistent with the provisions of the Special Planning Area and the City Improvement Standards.

Finding #2: The proposed architecture, site design, and landscape are suitable for the purposes of the building and the site and will enhance the character of the neighborhood and community.

Evidence #2: The proposed subdivision design is suitable for the development of the site. Individual lots are created for the Zoological Park itself, along with each of the parking lots. Additional lots are created for drainage facilities and remainder areas east of B Drive. Adequate public right-of-way is set aside for Lotz Parkway, Classical Drive, and B Drive, and pedestrian easements and utility easements are provided along all roadways.

Finding #3: The architecture, including the character, scale and quality of the design, relationship with the site and other buildings, building materials, colors, screening of exterior appurtenances, exterior lighting and signing and similar elements establishes a clear design concept and is compatible with the character of buildings on adjoining and nearby properties.

Evidence #3: While this condition is not applicable to tentative subdivision maps, the architecture and site design of the Project is consistent with the design provisions for architecture and landscaping provided in the Zoological Park Special Planning Area. Building designs provide for clearly defined public entrances or access points and detailing is provided in the respective roof designs, building articulations, and material and color pallets. Long blank façades are avoided. Roof planes and forms change in heights and character based upon the respective aspects of the building, including accenting entries and guest spaces from utility areas. The building designs positively contribute to the character and quality of the site by incorporating a common architecture language across the site. Further, the design of the buildings complements the surrounding area by being of high quality. While each of the proposed buildings are unique and reflective of its place on the site and the intent and use of the building, a common architecture language is established for the site, with the use of similar colors, materials, and overall building style. This includes the use of corrugated metal, roof overhangs and trellises, and approachable building massing and articulation.

Finding #4: The proposed Project will not create conflicts with vehicular, bicycle, or pedestrian modes of transportation.

Evidence #4: The design of the Project site separates arriving vehicular, bicycle, and pedestrian traffic into approach areas. Bicycle parking is located sufficiently near the entrances to the Zoo to be convenient and safe, but far enough away that bicycle

activities do not impede pedestrian traffic into the facility. Bicycle parking is provided on both the east and west approaches to help accommodate this. Within the parking area, dedicated pedestrian paths are provided. Within the Zoo, pedestrian/guest spaces are separated from utility and service paths, reducing conflict between guest and operations staff and services.

District Development Plan

Finding #1: The proposed project is consistent with the objectives of the General Plan, complies with applicable zoning regulations, special planning area provisions, Citywide and/or other applicable design guidelines, and improvement standards adopted by the City.

Evidence #1: The proposed Zoological Park is consistent with the General Plan. The Vision Statement provides that Elk Grove is "great place to make a home, a great place to work, and a great place to play" and describes the community as being "family-oriented" and plentiful in parks. General Plan Goal RC-1 notes that "Elk Grove aims to become a center within the larger region, providing opportunities for employment, recreation, education, retail, industry, and residential development. This objective aligns with regional goals for economic development, sustainability and resiliency, and quality of life." Accompanying policy RC-1-3 provides that Elk Grove should invest in public infrastructure, including developing "great public spaces including urban plazas and parks, and adequate community services." Policy CIF-5-1 provides that "community facilities should be planned and designed to provide services and programs available for residents." The proposed Zoological Park implements the General Plan Vision and the noted goal and policies as it provides for a family-oriented activity in a park-like environment and expands the range of community services and amenities. It also furthers objectives the City has to be a regional destination as noted in Goal RC-1.

The design of the proposed Project is consistent with the development standards provided for in the Zoological Park Special Planning Area, including setbacks, building height, parking requirements, and other standards. Roadways are designed consistent with the provisions of the Special Planning Area and the City Improvement Standards. The design includes an easy, logical arrival experience with a dedicated drop-off area. Parking areas are designed with pedestrian corridors for safe movements in and around vehicles (General Design Principals, SPA section 4.2). Individual habitat zones are built off the main street, or Green Corridor (Site Design, SPA section 4.3). Access and wayfinding is consistent with the provisions provided in section 4.4 of the SPA.

Finding #2: The proposed site design, landscaping, and other aspects of the project will positively contribute to the character and quality of the site and project and the surrounding neighborhood and community.

Evidence #2: As described in the Project plans, the Project design will positively contribute to the surrounding neighborhood. A solid wall is provided along the Lotz Parkway frontage, with landscaping and trail improvements, screening the site from adjoining development to the east. The layout of the site is built off of the surrounding context, including Classical Way, Lotz Parkway, and B Street.

Finding #3: The proposed project site design will not create conflicts with vehicular, bicycle, or pedestrian transportation modes of circulation.

Evidence #3: The design of the Project site separates arriving vehicular, bicycle, and pedestrian traffic into approach areas. Bicycle parking is located sufficiently near the entrances to the Zoo to be convenient and safe, but far enough away that bicycle activities do not impede pedestrian traffic into the facility. Bicycle parking is provided on both the east and west approaches to help accommodate this. Within the parking area, dedicated pedestrian paths are provided. Within the Zoo, pedestrian/guest spaces are separated from utility and service paths, reducing conflict between guest and operations staff and services.

Level 1 Design Review

Finding #1: The proposed architecture, landscaping, and other features of the building will positively contribute to the character and quality of the site and project and the surrounding neighborhood and community.

Evidence #1: The architecture and landscaping design for the Level 1 Buildings, including the Entry Complex, Giraffe Lodge, and Gelada Café/Animal Care Center are consistent with the design provisions for architecture and landscaping provided in the Zoological Park Special Planning Area. Building designs provide for clearly defined public entrances or access points and detailing is provided in the respective roof designs, building articulations, and material and color pallets. Long blank façades are avoided. Roof planes and forms change in heights and character based upon the respective aspects of the building, including accenting entries and guest spaces from utility areas. The building designs positively contribute to the character and quality of the site by incorporating a common architecture language across the site. Further, the design of the buildings complements the surrounding area by being of high quality.

Finding #2: The architecture, including the character, scale and quality of the design, relationship with the site and other buildings, building materials, colors, screening of exterior appurtenances, exterior lighting and signing and similar elements establishes a clear design concept and is compatible with the character of buildings elsewhere on the site.

Evidence #2: While each of the proposed buildings are unique and reflective of its place on the site and the intent and use of the building, a common architecture language is established for the site, with the use of similar colors, materials, and overall building style. This includes the use of corrugated metal, roof overhangs and trellises, and approachable building massing and articulation.

AND, BE IT FURTHER RESOLVED, that the City Council hereby approves the Art Plan for the Project as described in Exhibit E and incorporated herein by this reference and based upon the following finding;

Art Plan

Finding: The proposed art plan implements the requirements of the Zoological Park Special Planning Area and is consistent with the objectives of the City's Percent for the Arts Program.

Evidence: The proposed Art Plan provides a strategy for integrating public art into the Project, describing the process to solicit, select, and install the artwork. The Art Plan utilizes the same approach to setting the overall art budget as provided in the City's Percent for the Arts Program.

AND, BE IT FURTHER RESOLVED, that the City Council finds that the proposed Project is consistent with the City's General Plan based upon the analysis presented in the May 8, 2024 staff report and based upon the prior General Plan consistency findings contained in this resolution and may be listed in the City's Capital Improvement Program in such form as recommended to the City Council by the Public Works Director.

PASSED AND ADOPTED by the City Council of the City of Elk Grove this 8th day of May 2024

BOBBIE SINGH-ALLEN, MAYOR of the
CITY OF ELK GROVE

ATTEST:

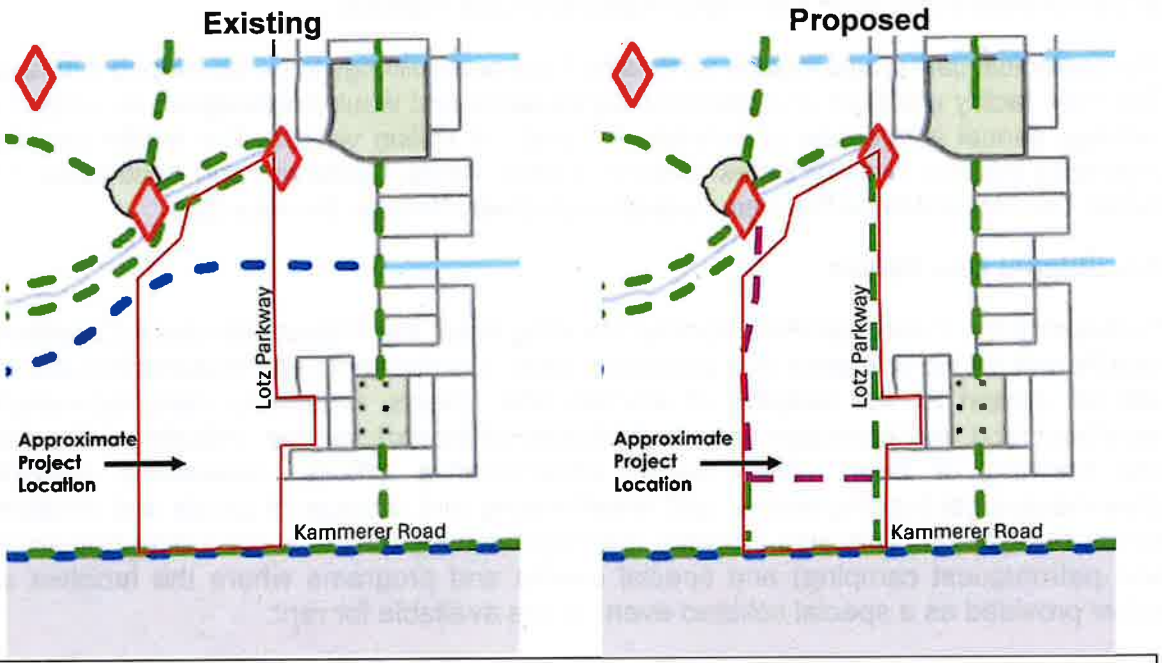
JASON LINDGREN, CITY CLERK

APPROVED AS TO FORM:

JONATHAN P. HOBBS,
CITY ATTORNEY

Exhibit A
Amendment to the Bicycle, Pedestrian, and Trails Master Plan

The Bicycle, Pedestrian, and Trails Master Plan shall be amended as follows:



Existing and Proposed Bicycle Network

Legend

Proposed Bicycle Facilities

- Proposed Class I Multi-Use Path
- Proposed Class II Bicycle Lane
- Proposed Class II Buffered Bicycle Lane
- Proposed Class III Bicycle Route
- Proposed Class IV Bikeway
- Proposed Class II Green Painted Bicycle Lane

Proposed Crossing Improvements

- Proposed At-Grade Class I Bikeway Crossing
- Proposed Grade-Separated Class I Bikeway Crossing
- Proposed Bicycle Specific Approach/ Crossing Improvement

Exhibit B
Project Description

The proposed Project, **The New Zoo at Elk Grove**, involves the construction of a new zoological park and associated facilities and activities on an approximately 103-acre site at the northwest corner of Kammerer Road and Lotz Parkway.

The zoological park would include various facilities and buildings to be developed in phases. The main facility would be on approximately 65 acres and would be designed to support an average annual attendance of between 1.1 and 1.6 million visitors. The facility would be organized into four primary zones: Green Corridor, Africa, California, and Australasia. The Green Corridor would be the main pedestrian pathway through the New Zoo.

Conditional Use Permit

Pursuant to the Zoological Park Special Planning Area, the Project includes a Conditional Use Permit for the operation of a zoological park. Components and features include, but are not limited to, the keeping of animals and insects, veterinary care, educational activities, food and beverage service (inclusive of alcohol service, including limited on-site brewing of beer), retail sales, administrative offices, caretaker's quarters, greenhouses/gardens/nurseries, and warehousing and storage of goods and materials for on-site usage. This also includes overnight accommodations (including hotel/motel and patron/guest camping) and special events and programs where the facilities are either provided as a special ticketed event or are available for rent.

Tentative Parcel Map

The Project includes the approval of a Tentative Parcel map in substantially the form provided in the Project plans. The Tentative Parcel Map includes seven (7) lots and the set aside of public right-of-way for public streets and other utilities, as well as the dedication of easements for public utilities.

District Development Plan

Pursuant to the Zoological Park Special Planning Area, the Project includes a District Development Plan, as described in the Project Plans and Exhibits. Major components of the District Development Plan include, but are not limited to:

- Parking facilities
- Main Entry Complex
- Green corridor
- Restaurants and food pavilions, including but not limited to the Giraffe Café, and Gelada Café, and the Beer Garden
- Animal Care Center
- Play areas
- Overnight accommodations
- Education services
- Administration and operations facilities
- Warehouse and storage facilities
- Life Support Systems

- Animal habitats and off-exhibit care areas, including Africa, California, and Australasia

The District Development Plan is organized into four phases. Aside from the core components of Phase 1 (e.g., Main Entry Complex, Green Corridor, Animal Care Center), the order of phasing may be adjusted or otherwise occur in any order.

- Phase 1 of the Project would involve construction of the Green Corridor and Africa. However, specific animal habitats within these zones may themselves be phased depending on project funding. Phase 1A would include the base Zoo footprint and Phase 1B would include additional zoological features as shown in the Project Plans. Phase 1C would include the hippopotamus and additional savannas in the northwest corner of the site.

- Phase 2 of the Project would include the California zone with exhibits at the southeast portion of the site. The California zone would include restrooms, a rehab and rescue facility, as well as a building for changing exhibits and an education building. Additional overnight guest accommodations may also be included, with views into the animal habitats and holding areas.

- Phase 3 would consist of construction of a permeant administration office building, replacing the modular buildings constructed in Phase 1. The Administration building would be located between the California zone and the entry complex. The building(s) would be no more than three stories tall.

- Phase 4, the Australasia zone, would be located north of the Animal Care building near the northeast corner of the site. Additional overnight guest accommodations may also be included, with views into the animal habitats and holding areas.

The District Development Plan also includes the identification of parking facilities (both guest and employee), pedestrian spaces, utilities, and strategies for landscaping, lighting, shade structures, and other physical attributes as depicted in the Project Plans.

Level 1 Design Review

The Project includes Level 1 Design Review, as required by the Zoological Park Special Planning Area, for the following major buildings and facilities:

- Entry Complex
- Giraffe Café/Lodge
- Animal Care Center/Nutrition Center/Gelada Café

The design of the buildings is as provided in the Project plans.

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THE NEW ZOO AT ELK GROVE

Schematic Plans

EXHIBIT C1

Date: September 22, 2023
Project Location: Elk Grove, CA
Prepared For: Sacramento Zoological Society

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X134 BARRIERS DIAGRAM - AREA D
X140 PHASE 1a AND 1b OVERALL LANDSCAPE STRATEGY PLAN
X141 LANDSCAPE STRATEGY - AREA A
X142 LANDSCAPE STRATEGY - AREA B
X143 LANDSCAPE STRATEGY - AREA C
X144 LANDSCAPE STRATEGY - AREA D

PHASE 1A AND 1B SECTIONS
X300 VIEWS FROM LOTZ PARKWAY - PHASE 1
X301 VIEWS FROM LOTZ PARKWAY - FULL BUILD-OUT
X310 SECTIONS - ENTRY TO LION
X311 SECTIONS - GIRAFFE LODGE TO LION
X312 SECTIONS - SAVANNA WEST VIEW
X313 SECTIONS - SAVANNA TUNNEL
X314 SECTIONS - LION
X315 SECTIONS - MEERKAT
X316 SECTIONS - FLAMINGO
X317 SECTIONS - OKAPI, COLOBUS
X318 SECTIONS - GELADA
X319 SECTIONS - GELADA AND TORTOISE
X320 SECTIONS - CHEETAH AND RHINO
X321 SECTIONS - LEMUR
X322 SECTIONS - ALLIGATOR AND SQUIRREL MONKEY
X323 SECTIONS - PLAY
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X331 BARRIER DETAILS - SAVANNA
X332 BARRIER DETAILS - CHEETAH, RHINO, AND ALLIGATOR
X333 BARRIER DETAILS - GELADA
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PHASE 1A AND 1B ARTISTIC LANDSCAPE SKETCH VIEWS
X350 MODEL VIEWS
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IMAGE BOARDS
X401 SITE CHARACTER ZONE PLAN
X402 IMAGE BOARD - CITY WALK
X403 IMAGE BOARD - AFRICA
X404 IMAGE BOARD - GREEN CORRIDOR
X405 IMAGE BOARD - ARRIVAL PLAZA
X406 IMAGE BOARD - BEER GARDEN
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X701 PHASE 1 CARE QUARTERS PLANS
X702 PHASE 1 CARE QUARTERS PLANS
X703 PHASE 1 CARE QUARTERS PLANS
X704 PHASE 1 CARE QUARTERS PLANS
X705 PHASE 1 CARE QUARTERS PLANS
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X708 PHASE 1 CARE QUARTERS PLANS

Architecture
A1-0.01 RENDERS
A1-0.02 RENDERS
A1-0.03 RENDERS
A1-0.11 3D VIEWS
A1-2.31 ENTRY - FLOOR PLAN
A1-2.33 ENTRY - ROOF PLAN
A1-3.11 ENTRY - EXTERIOR ELEVATIONS
A1-9.11 ENTRY-EXTERIOR FINISH LEGEND

A2-0.01 RENDERS
A2-0.02 RENDERS
A2-0.11 3D VIEWS
A2-2.31 LODGE - FLOOR PLAN
A2-2.33 LODGE - ROOF PLAN
A2-3.11 LODGE - EXTERIOR ELEVATIONS
A2-3.12 EVENT PAVILIONS - EXTERIOR ELEVATIONS
A2-9.11 LODGE-EXTERIOR FINISH LEGEND

A3-0.01 GELADA_ANIMAL CARE RENDERS
A3-0.02 GELADA_ANIMAL CARE RENDERS
A3-0.11 GELADA_ANIMAL CARE 3D VIEWS
A3-2.31 GELADA_ANIMAL CARE - FLOOR PLAN
A3-2.33 GELADA_ANIMAL CARE - ROOF PLAN
A3-3.11 GELADA_ANIMAL CARE - EXTERIOR ELEVATIONS
A3-3.12 GELADA_ANIMAL CARE - EXTERIOR ELEVATIONS
A3-9.11 GELADA_ANIMAL CARE - EXTERIOR FINISH LEGEND

LSS
LS001 SHEET INDEX, SYMBOLS, ABBREVIATIONS AND NOTES
LS002 EQUIPMENT SCHEDULES

LS-SAV-021 SAVANNA HABITAT - PROCESS FLOW DIAGRAM
LS-FLA-021 FLAMINGO - PROCESS FLOW DIAGRAM
LS-GEL-021 GELADA - PROCESS FLOW DIAGRAM
LS-ALL-021 ALLIGATOR - PROCESS FLOW DIAGRAM

LS101 LSS SITE PLAN
LS301 ENLARGED LSS PLAN
LS302 ENLARGED LSS PLAN
LS303 ENLARGED LSS PLAN
LS304 ENLARGED LSS PLAN
LS305 ENLARGED LSS PLAN

SAC ZOO

shr STUDIOS

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP ENGINEERING

exp.

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The New Zoo at Elk Grove

COVER SHEET

SHEET SIZE ARCH E (36" x 48")
DATE
SCALE
CHECKED
SHEET

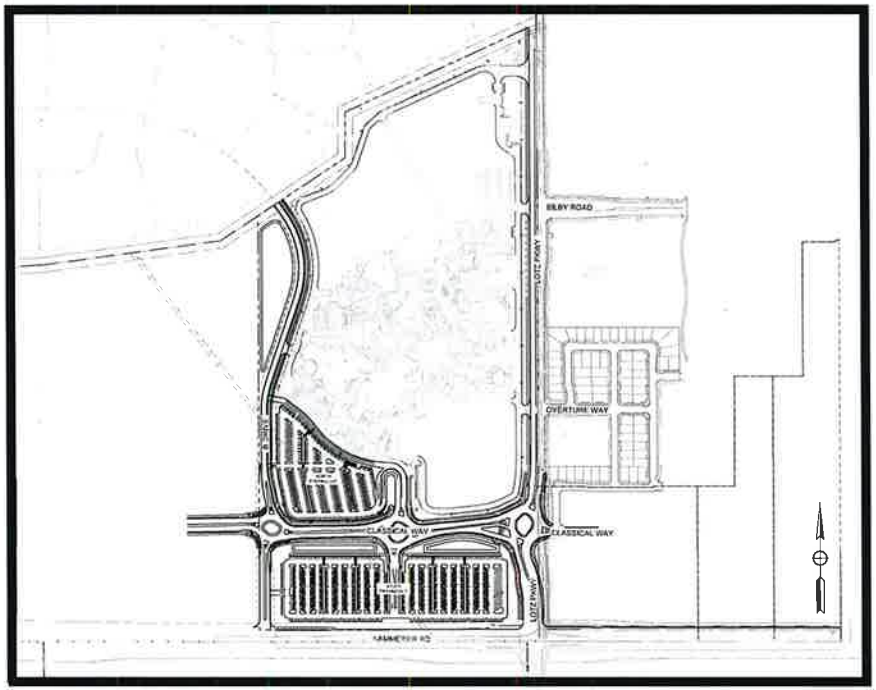
G101

Schematic Plans

EXHIBIT C2

LOCATION MAP

NTS



SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
C-000	INDEX SHEET
C-001	ALTA SURVEY
C-002	ALTA SURVEY
C-100	VEHICULAR ACCESS - CIRCULATION PLAN
C-200	PARKING LOT LAYOUT PLAN
C-300	FIRE PLAN
C-400	OVERALL UTILITY PLAN
C-401	UTILITY PLAN
C-402	UTILITY PLAN
C-500	OVERALL STORMWATER PLAN
C-501	STORMWATER PLAN
C-502	STORMWATER PLAN
C-601	STORMWATER QUALITY PLAN - PHASE 1B
C-602	STORMWATER QUALITY PLAN - FULL BUILD OUT
C-700	MASS GRADING EXHIBIT – PHASE 1B

SAC ZOO

shr

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The New Zoo at Elk Grove

INDEX SHEET

SHEET SIZE: ARCH C (18" x 24")
DATE: 06 OCTOBER, 2023
SCALE:
CHECKED: SHR
SHEET:

C-000

Schematic Plans

SAC ZOO

SHR Studios

Kimley»Horn

The New Zoo at Elk Grove

ALTA SURVEY

NOT FOR CONSTRUCTION

SHEET SIZE ARCH E (36" x 48") | DATE 05 OCTOBER, 2023 | SCALE | CHECKED SHR | SHEET

C-001

Schematic Plans

NOT TO SCALE
FOR REFERENCE ONLY

PROPERTY NOTES

BOUNDARY [illegible] BASED UPON A FIELD SURVEY AND FOUND MONUMENTS

LEGAL DESCRIPTION

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF ELK GROVE, IN THE COUNTY OF SACRAMENTO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS

PARCEL ONE

ALL THAT PORTION OF SECTION 13, TOWNSHIP 6 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, BEING A PORTION OF THE LANDS OF PACIFIC TELEPHONE AND TELEGRAPH CO. AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK [illegible] OF SURVEYS, AT PAGE 150, OFFICIAL RECORDS OF SACRAMENTO COUNTY AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF THE SAID PACIFIC TELEPHONE AND TELEGRAPH CO. PARCEL, BEING THE INTERSECTION OF THE CENTERLINE OF KAMMERER ROAD AND THE WEST LINE OF SAID PACIFIC TELEPHONE AND TELEGRAPH CO. PARCEL; THENCE ALONG THE WEST LINE OF SAID PARCEL [illegible] TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID WEST LINE NORTH 00°42'36" WEST, 56.41 FEET TO THE NORTH LINE OF SAID PACIFIC TELEPHONE AND TELEGRAPH CO. PARCEL; THENCE ALONG SAID NORTH LINE NORTH 89°17'24" EAST, 120.00 FEET TO THE EAST LINE OF SAID PACIFIC TELEPHONE AND TELEGRAPH CO. PARCEL; THENCE ALONG SAID EAST LINE SOUTH 00°42'36" EAST, 56.42 FEET; THENCE LEAVING SAID EAST LINE SOUTH 89°17'46" WEST 120.00 FEET TO THE SAID TRUE POINT OF BEGINNING

[illegible] PORTION

PARCEL TWO

ALL THAT PORTION OF [illegible] QUARTER OF THE [illegible] QUARTER OF SECTION 13, TOWNSHIP 6 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, BEING A PORTION OF THE CITY OF ELK GROVE PARCEL OF LAND DESCRIBED IN THE QUIT CLAIM DEED RECORDED IN DOCUMENT NO. 201803270318, OFFICIAL RECORDS OF SACRAMENTO COUNTY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A POINT IN THE CENTERLINE OF KAMMERER ROAD, A COUNTY ROAD, WHICH POINT IS THE SOUTHWEST CORNER OF THE CERTAIN PARCEL OF LAND CONVEYED TO THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION, BY DEED DATED OCTOBER 4, 1941 AND RECORDED OCTOBER 6, 1941, IN BOOK 911 AT PAGE 288, OFFICIAL RECORDS OF SACRAMENTO COUNTY; THENCE ALONG THE WEST LINE OF SAID PACIFIC TELEPHONE AND TELEGRAPH COMPANY PARCEL, BEING THE EAST LINE OF SAID CITY OF ELK GROVE PARCEL, NORTH 00°42'36" WEST, 63.59 FEET TO THE TRUE POINT OF BEGINNING; THENCE LEAVING SAID LINE SOUTH 89°17'46" WEST, 65.42 FEET; THENCE SOUTH 89°09'01" WEST, 145.92 FEET TO THE WEST LINE OF SAID CITY OF ELK GROVE PARCEL; THENCE ALONG SAID WEST LINE [illegible] TO THE NORTH LINE OF SAID CITY OF ELK GROVE PARCEL; THENCE ALONG SAID NORTH LINE NORTH 89°17'24" EAST, 208.71 FEET TO THE EAST LINE OF SAID CITY OF ELK GROVE PARCEL; THENCE ALONG SAID EAST LINE SOUTH 00°42'36" EAST [illegible] FEET TO THE TRUE POINT OF BEGINNING

[illegible] PORTION

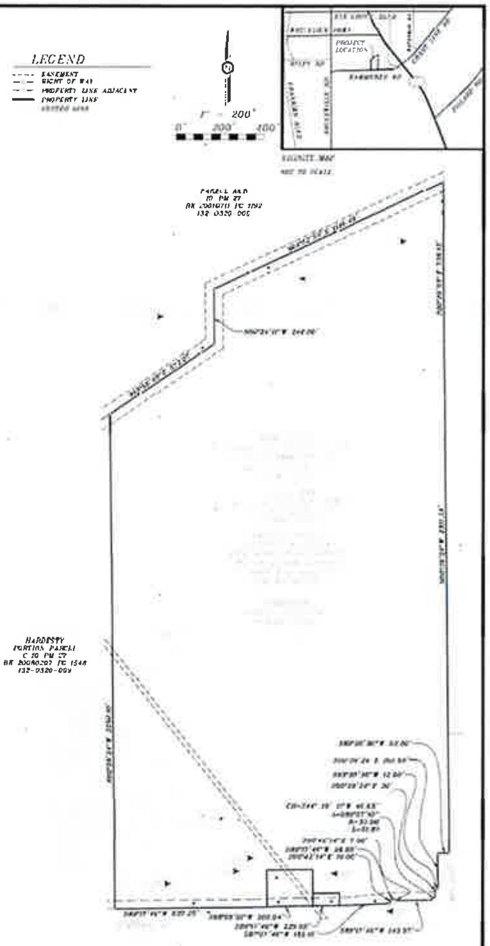
PARCEL THREE

[illegible]

VERTICAL DATUM: NAVD88 BASED ON OBSERVATIONS TO NGS PID [illegible]
BASIS OF BEARING: THE BASIS OF BEARING FOR THIS LEGAL DESCRIPTION IS THE CENTER LINE OF KAMMERER ROAD AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK [illegible] OF SURVEYS AT PAGE [illegible] OF OFFICIAL RECORDS OF SACRAMENTO COUNTY

FLOOD ZONE: ZONE X - AREA WITH REDUCED FLOOD RISK, COMMUNITY PANEL NUMBER [illegible] MAP EFFECTIVE AUGUST 16, 2012

PARKING SPACE COUNT: NO PARKING SPACES ON SITE



EXCEPTIONS

[illegible]

SURVEYORS CERTIFICATE

[illegible]

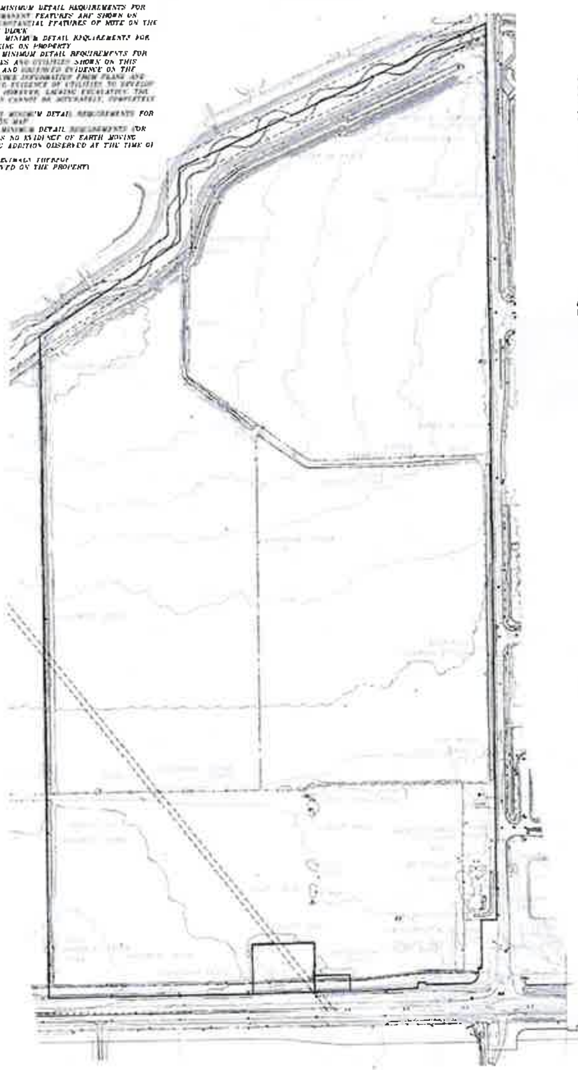
DATE OF SURVEY [illegible]	ALTA/NSPS LAND AND TITLE SURVEY
DATE OF PLAT 3/22/2022	PROPERTY ADDRESS: [illegible] KAMMERER ROAD
SHEET 1 OF 2	CITY OF ELK GROVE · COUNTY OF SACRAMENTO · STATE OF CALIFORNIA

UNICO ENGINEERING
110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630
PHONE: [illegible]

GENERAL NOTES

1. THIS MAP WAS PREPARED IN ACCORDANCE WITH FIDELITY TITLE COMPANY ORDER [illegible] AND REFLECTS THE REAL PROPERTY AND [illegible] ENCUMBRANCES [illegible] THEREIN. ITEMS PERTAINING TO TAXES, [illegible] [illegible] ARE BEYOND THE SCOPE OF THIS SURVEY AND ARE NOT REPRESENTED HEREON
2. WITH REGARD TO TABLE A, ITEM 2 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS. THE ADDRESS OF THE SUBJECT PROPERTY IS SHOWN IN THE TITLE BLOCK BELOW
3. WITH REGARD TO TABLE A, ITEM 3 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS. THE FLOOD ZONE INFORMATION IS SHOWN IN THE PROPERTY NOTES
4. WITH REGARD TO TABLE A, ITEM 4 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS. GROSS LAND AREA IS SHOWN ON MAP
5. WITH REGARD TO TABLE A, ITEM 5 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS. THE SURVEY PERFORMED IS A GROUND SURVEY BASED UPON THE VERTICAL DATUM SHOWN IN THE PROPERTY NOTES. CONTOUR INTERVAL IS 1 (ONE) FOOT
6. WITH REGARD TO TABLE A, ITEM 7 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS- EXTERIOR BUILDING DIMENSIONS SHOWN ON MAP
7. WITH REGARD TO TABLE A, ITEM 8 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS- ALL PERMANENT FEATURES ARE SHOWN ON SURVEY. THERE WERE NO TEMPORARY OR SUBSTANTIAL FEATURES OF NOTE ON THE DATE OF THE SURVEY SHOWN IN THE TITLE BLOCK
8. WITH REGARD TO TABLE A, ITEM 9 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS- NO PARKING ON PROPERTY
9. WITH REGARD TO TABLE A, ITEM 11 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS- FACILITIES AND UTILITIES SHOWN ON THIS SURVEY ARE BASED ON THE FIELD SURVEY AND OBSERVED EVIDENCE ON THE SURFACE AT THE TIME OF THE SURVEY. [illegible] INFORMATION FROM PLANS AND MARKINGS CAN BE COMBINED WITH OBSERVED EVIDENCE OF UTILITIES TO DEVELOP A VIEW OF THOSE UNDERGROUND UTILITIES. HOWEVER, LACKING EXCAVATION, THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED
10. WITH REGARD TO TABLE A, ITEM 13 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS- SHOWN ON MAP
11. WITH REGARD TO TABLE A, ITEM 16 OF THE MINIMUM DETAIL REQUIREMENTS FOR ALTA/NSPS LAND TITLE SURVEYS- THERE IS NO EVIDENCE OF EARTH MOVING WORK, BUILDING CONSTRUCTION, OR BUILDING ADDITION OBSERVED AT THE TIME OF THE SURVEY
12. ALL DISTANCES SHOWN ARE IN FEET AND DECIMALS THEREOF
13. NO CEMETERIES OR BURIAL GROUNDS OBSERVED ON THE PROPERTY

VICINITY MAP
NOT TO SCALE



LEGEND

- EASEMENT
- RIGHT OF WAY
- PROPERTY LINE ADJACENT
- PROPERTY LINE
- 1' CONTOUR
- CENTER LINE
- VALVE
- UTILITY POLE
- MANHOLE
- SIGN

1" = 150'
0' 150' 300'

NOT TO SCALE
FOR REFERENCE ONLY

DATE OF SURVEY 01/06/2022	ALTA/NSPS LAND TITLE SURVEY	UNICO ENGINEERING
DATE OF PLAT 03/22/2022	PROPERTY ADDRESS: 9675 KAMMERER ROAD	110 BLUE RAVINE RD SUITE 101 | FOLSOM, CA 95630
SHEET 2 OF 2	CITY OF ELK GROVE COUNTY OF SACRAMENTO STATE OF CALIFORNIA	PHONE: 916 800 0023 | unicoengineering.com

NOT FOR CONSTRUCTION

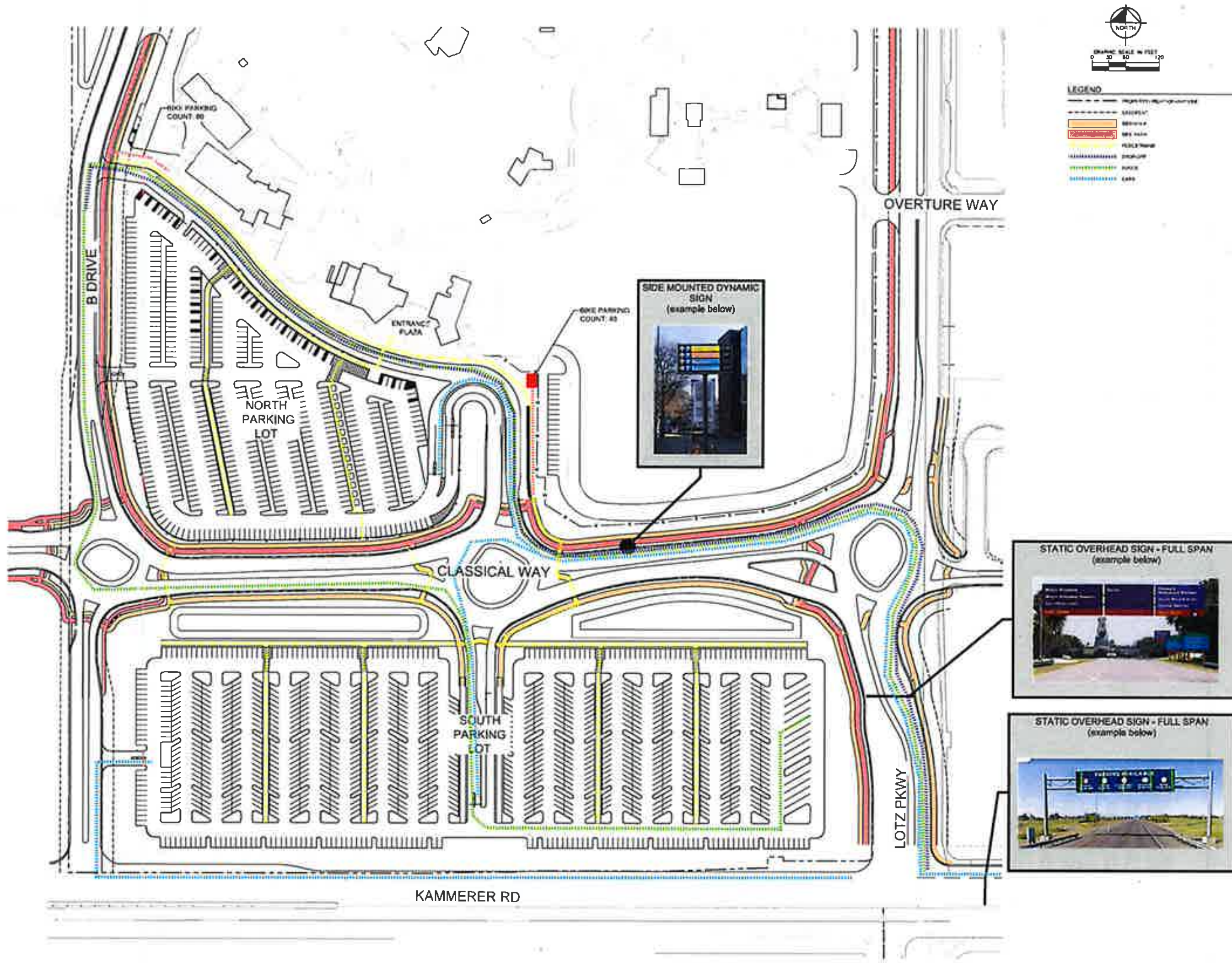
The New Zoo at Elk Grove

ALTA SURVEY

DATE: 06 OCTOBER, 2023

C-002

Schematic Plans



SAC ZOO

shr
SH R Studios

Kimley»Horn

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

VEHICULAR ACCESS - CIRCULATION PLAN

SHEET SIZE ARCH E (36" x 48")
DATE
SCALE:
CHECKED SHR
SHEET

C-100

Schematic Plans

LEGEND

STANDARD PARKING PROVIDED	
PARKING STALL TYPE	COMBINED
STANDARD PARKING	1058
ACCESSIBLE PARKING	26
STANDARD TOTAL	1084

EV PARKING PROVIDED	
PARKING STALL TYPE	COMBINED
EV CAPABLE	242
EVCS	85
EV STANDARD ACCESSIBLE	1
EV VAN ACCESSIBLE	2
EV AMBULATORY	0
EV TOTAL	327

PARKING PROVIDED TOTAL	
	COMBINED
OVERALL PARKING COUNT	1625
BICYCLE PARKING	126

SAC ZOO

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Kimley»Horn

REV	DATE	DESCRIPTION
1	10/09/2023	For Review
2	10/20/2023	For Pricing

NOT FOR CONSTRUCTION

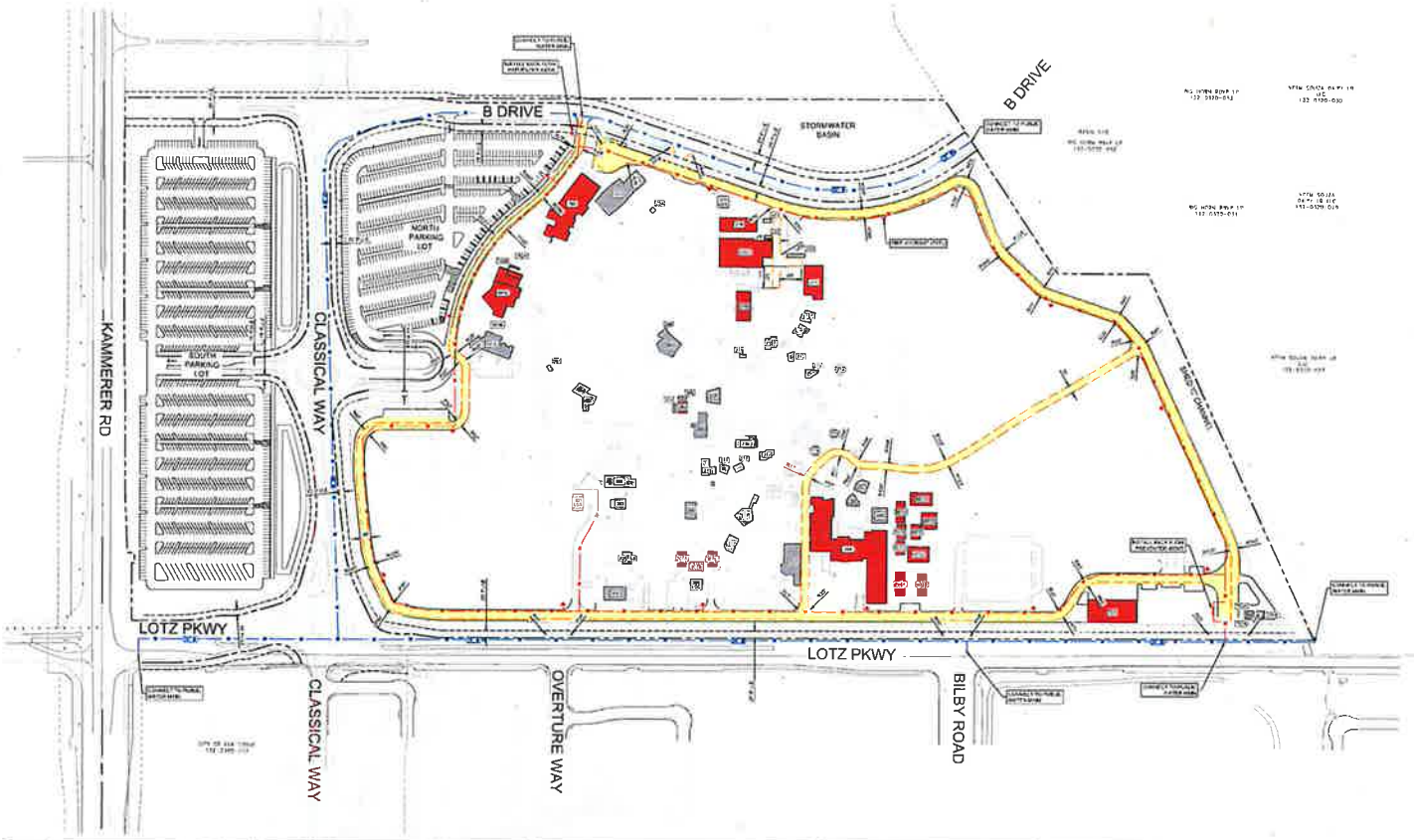
The New Zoo at Elk Grove

PARKING LOT LAYOUT PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	20 OCTOBER 2023
SCALE	
CHECKED	SHR
SHEET	

C-200

Schematic Plans



BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
101	Entrance Lift		
102	Ranger		
103	Education Entry Restrooms	450	6
104	Ticketing	150	4
105	Events Pavilion		
201	Great Kindergarten Care Quarters		
202	Giraffe Feeding Shelter Service Room		
203	Giraffe Feeding Shelter Restrooms	350	6
204	Bear Canyon Restrooms		
205	Bear Service		
206	Elephant Care Quarters		
207	Elephant Yard Shelter		
208	Tasmanian Tiger Care Quarters		
209	Lion View Shelter 1		
210	Lion View Shelter 2		
211	Meerkat Care Quarters		
212	Rhino View Shelter 1		
213	Rhino View Shelter 2		
214	Rhino Interpretive Shelter		
215	Overnight Guest Duplex		
216	Overnight Guest Duplex		
217	Overnight Guest Duplex		
218	Lion Care Quarters	350	6
219	Wolf Care Quarters	450	6
220	Giraffe Care Quarters	450	6
221	Overnight Guest Suite		
222	Hoofstock Care Quarters	350	6
223	Operations Lift		
224	Back to Wolves Duplex		
225	Hay Storage		
226	Tasmanian Giraffe Feeding Shelter		

BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
301	Flamingo Lift		
302	Flamingo Care Quarters Remodel		
303	Rhino Keepers Care Quarters		
304	Lot 3 Warehouse		
305	Lot 2 Construction Care Quarters		
306	Giraffe Care Quarters		
307	Giant Panda Care Quarters		
308	Art Instructional Room	350	6
309	Art Instructional Room		
310	Art Instructional Room		
311	Gondola Lift		
312	Kangaroo Keen Building		
313	Gondola View Shelter 1		
314	Gondola View Shelter 2		
315	Reptile Care Quarters		
316	Reptile Viewing Shelter 1		
317	Reptile Viewing Shelter 2		
318	Reptile & Rainforest Care Quarters		
319	Reptile Viewing Shelter		
320	Penguin Care Quarters		
321	Penguin Care Shelter 1		
322	Penguin Care Shelter 2		
323	Gondola Care Quarters		
324	Equestrian & Ruminant Service	450	6
325	Mountain Goat Keeps	350	6
326	Interpretive Shelter System		
327	Back to Wolves Service		
328	Tent		

BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
001	Admin Modular 1	450	6
002	Admin Modular 2	450	6
003	Admin Modular 3	450	6
004	Admin Modular 4	450	6
005	Admin Modular 5	450	6
006	Admin Modular 6	450	6
007	Maintenance - Refrigerated	450	6
008	Weather Staff Modular 1	450	6
009	Weather Staff Modular 2	450	6

BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
401	Changing Balcony	350	6
402	Bear Care Quarters & Lift		
403	California Polar Bear Habitat Holding Building	350	6
404	Sea Lion Care Quarters		
405	Education & Classrooms	450	6
406	California Grizzly Habitat Building	450	6
407	Aquarium Care Quarters		
408	Grizzly Bear View Shelter		
409	Animal Care Quarters		
410	Restrooms - California		
411	Food Area		
412	Flag Pumped Water Care Quarters		
413	Service & Refrigeration	350	6
414	Grizzly Bear Care Quarters & Lift		
415	Mexican Wolf Viewing		
416	Hippo Terrapin View Shelter		
417	Hippo River View Shelter		
418	Food & Restroom Kiosk		
419	Overnight Animal Building	450	6
420	Accommodation 1		
421	Accommodation 2		
422	Accommodation 3		
423	Accommodation 4		
424	Accommodation 5		
425	Accommodation 6		
426	Accommodation 7		
427	Accommodation 8		
428	Hippo Care Quarters		
429	Hippo Tiger Exhibition		
430	Service Area 1/2		
431	Service Area 3/4		
432	Viewing Breeding / Hoofstock Lift	450	6

BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
501	Visitor Lion Exhibit Indoor Exhibits	450	6
502	Hoofstock Support And Service 1 &		
503	Hoofstock Care Quarters		
504	Tiger View Shelter		
505	Tiger Care Quarters		
506	Snow Care Quarters 1		
507	Restrooms - Kids		
508	Rhino Viewing Shelter		
509	Tiger Care Quarters		
510	Tiger View Shelter		
511	North Arctic Restrooms		
512	North Arctic View Shelter		
513	North Arctic Care Quarters		
514	Commissary Care Quarters		
515	Hoofstock Snow Care Quarters		
516	Tricycled Leopard View Shelter		
517	Warthog Breed Group	450	6
518	Event Kiosk 1		
519	Event Kiosk 2		
520	Event Kiosk 3		
521	Event Storage	450	6

LEGEND

- PROPERTY / RIGHT-OF-WAY LINE
- OWNER WATER MAIN LINE AND PUBLIC WATER
- PUBLIC WATER MAIN
- FIRE HYDRANT
- FIRE LANE
- PUBLIC WAY WITH SPRINKLER SYSTEM
- BUILDING WITH OUT SPRINKLER SYSTEM
- BUILDING SETBACK
- 8-20' MIN
- FIRE TRUCK PATH

FIRE WATER NOTES

1. FIRE HYDRANTS PLACEMENT IS CONSTRAINED DIRECTLY BY FIRE DEPARTMENT'S REQUIREMENT.
2. ALL PATH LINES MINIMUM RADIUS MUST BE CALCULATED BY OTHERS.

GRAPHIC SCALE IN FEET
0 50 100 200

SAC ZOO

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Kimley»Horn

REV	DATE	DESCRIPTION
1	10/02/2023	For Review
2	10/20/2023	For Pricing

NOT FOR CONSTRUCTION

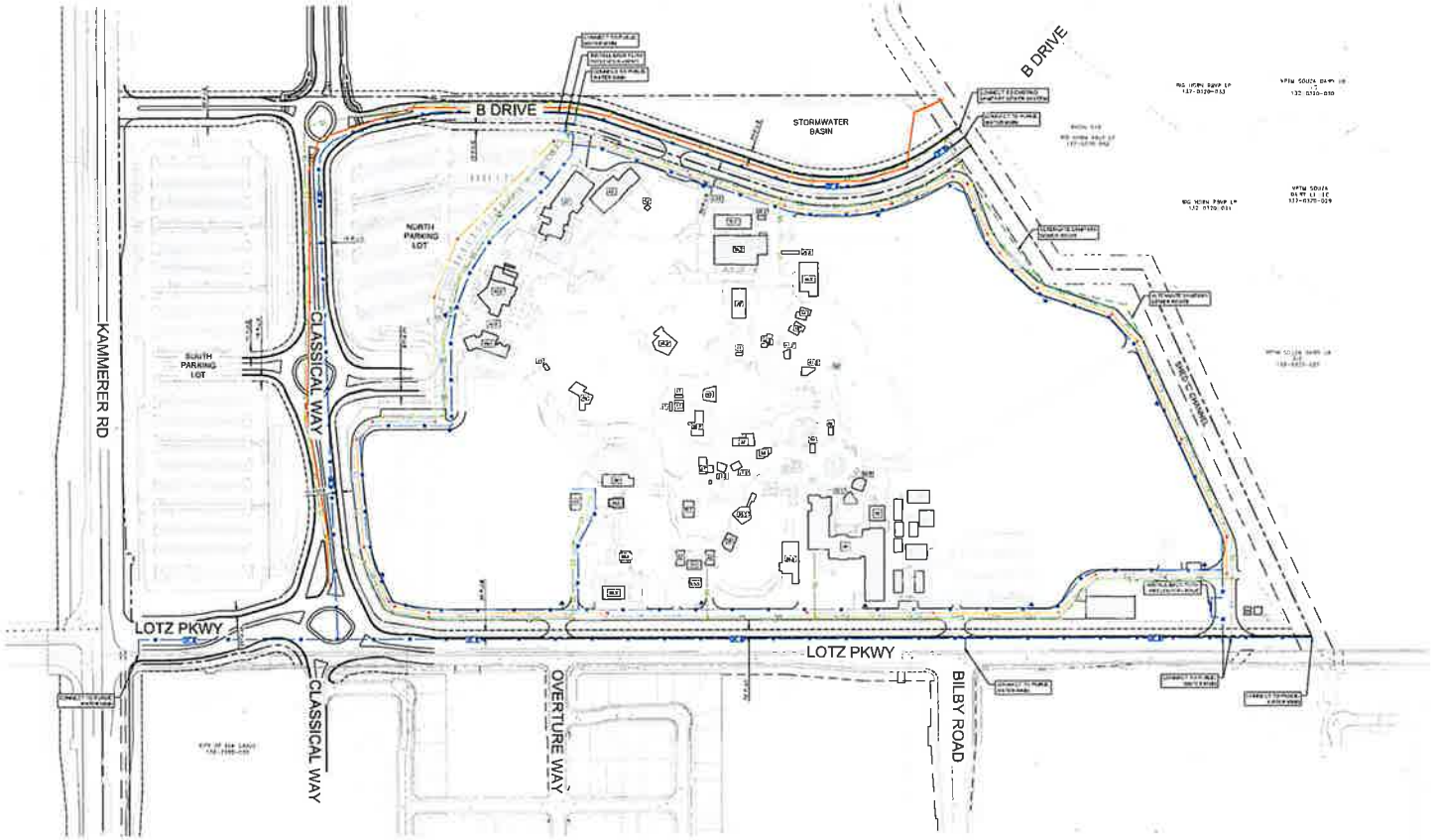
The New Zoo at Elk Grove

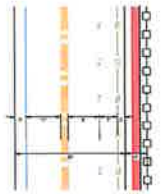
FIRE PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	06 OCTOBER, 2023
SCALE	
CHECKED	SHR
SHEET	-

C-300

Schematic Plans





TYPICAL PERIMETER DRIVE UTILITY LAYOUT

LEGEND

GRAPHIC SCALE IN FEET
0 50 100 200

SAC 200

SH R Studios

Kimley»Horn

REV	DATE	DESCRIPTION
1	04/05/2023	For Review
2	10/27/2023	For Planning

NOT FOR CONSTRUCTION

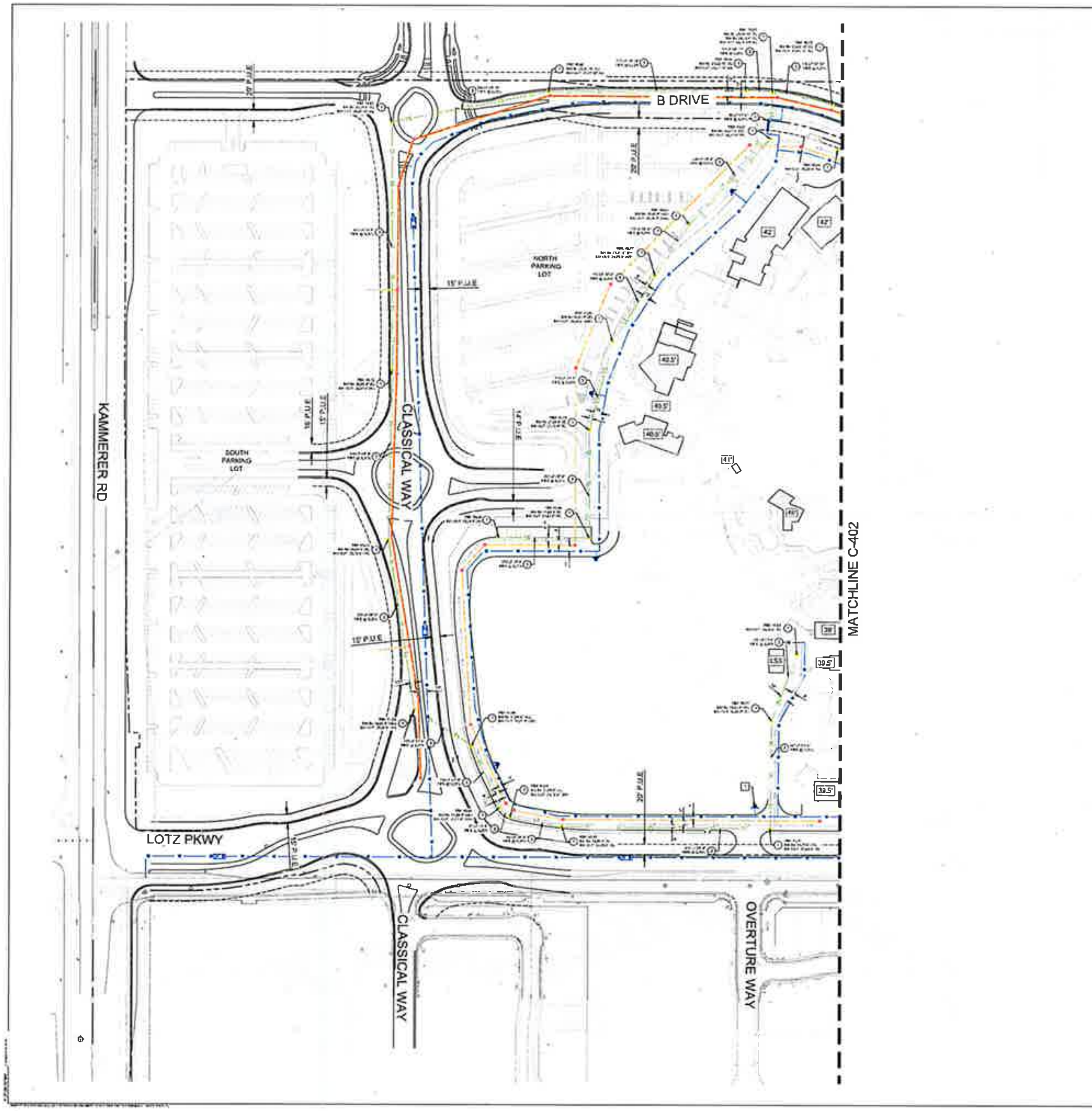
The New Zoo at Elk Grove

OVERALL UTILITY PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	06 OCTOBER, 2023
SCALE:	
CHECKED	SHR
SHEET	

C-400

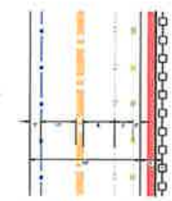
Schematic Plans



LEGEND

FIRE WATER CONSTRUCTION NOTES

SANITARY SEWER NOTES



TYPICAL PERIMETER DRIVE UTILITY LAYOUT

SAC ZOO

SHR Studios

Kimley»Horn

NOT FOR CONSTRUCTION

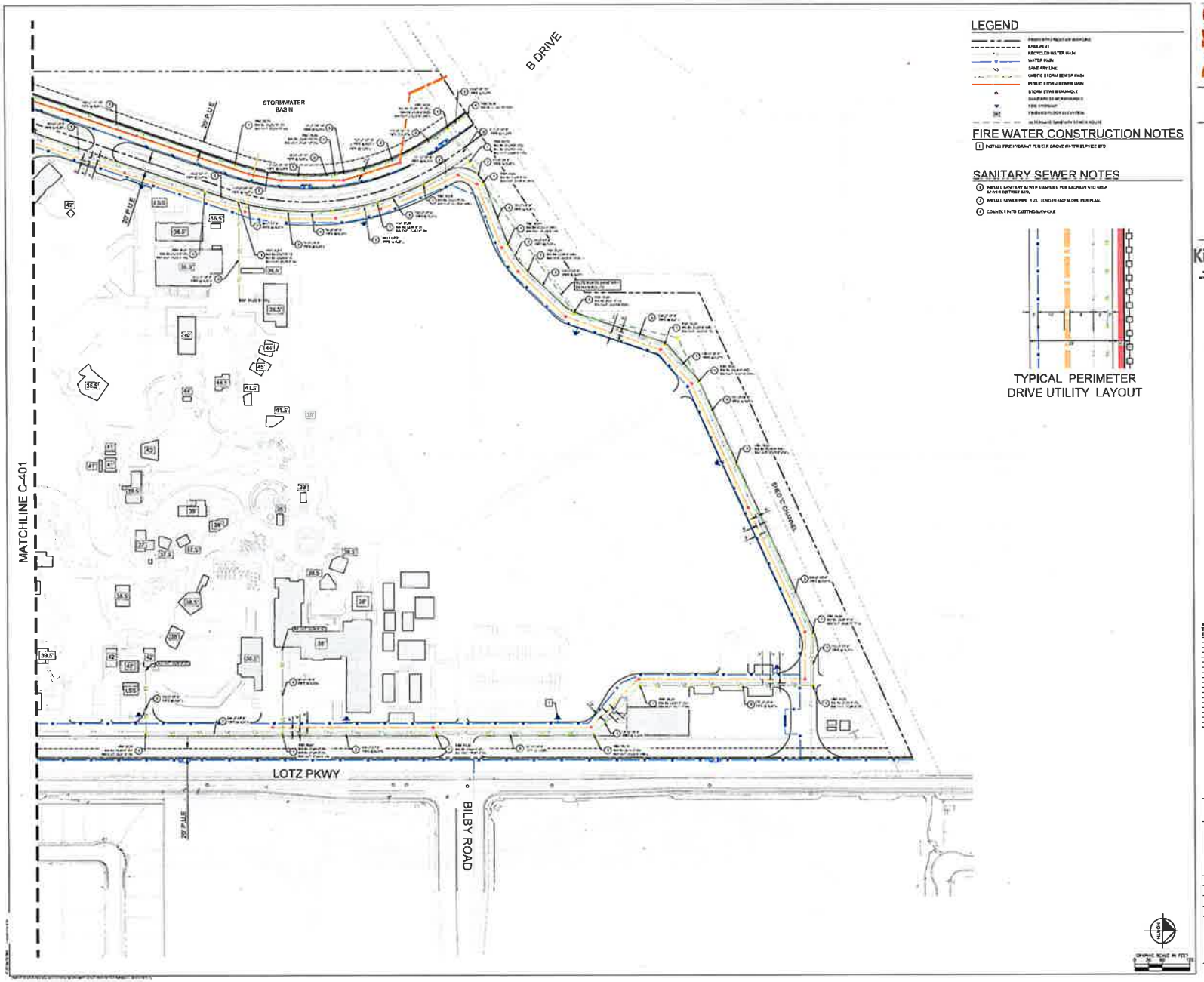
The New Zoo at Elk Grove

UTILITY PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	08 OCTOBER, 2023
SCALE:	
CHECKED	SHR
SHEET	

C-401

Schematic Plans



SAC ZOO

SHR Studios

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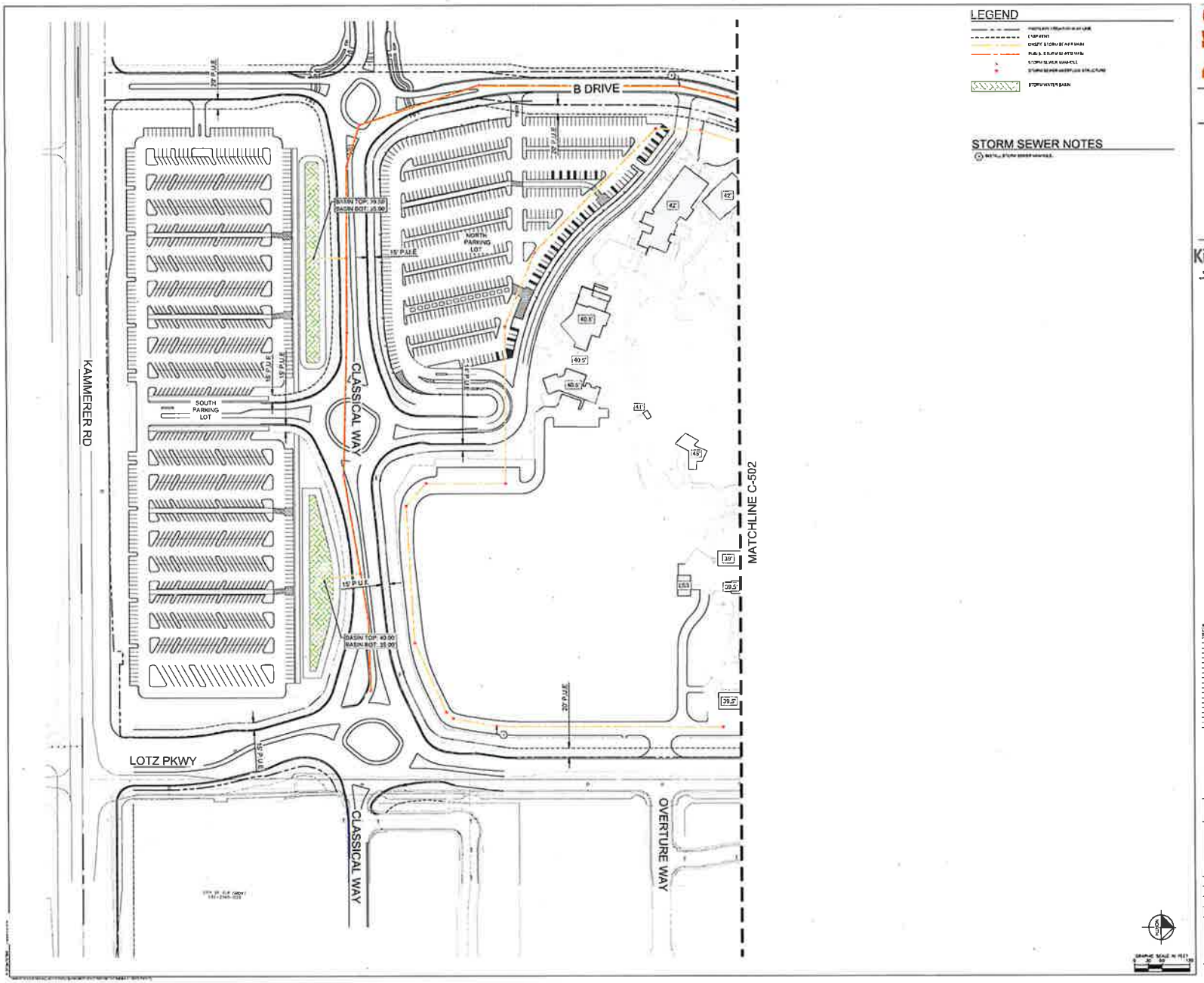
The New Zoo at Elk Grove

UTILITY PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	05 OCTOBER, 2021
SCALE:	
CHECKED	SHR
SHEET:	C-402

Schematic Plans

SAC ZOO
shr
Kimley-Horn
B DRIVE
OUTFALL TO SHED C CHANNEL
SHED 'C' CHANNEL
STORMWATER BASIN
BILBY ROAD
LOTZ PKWY
OVERTURE WAY
NORTH PARKING LOT
CLASSICAL WAY
SOUTH PARKING LOT
KAMMERER RD
LEGEND
NOT FOR CONSTRUCTION
The New Zoo at Elk Grove
OVERALL STORMWATER PLAN
C-500
Schematic Plans



SAC ZOO

shr

SHR Studios

Kimley»Horn

NOT FOR CONSTRUCTION

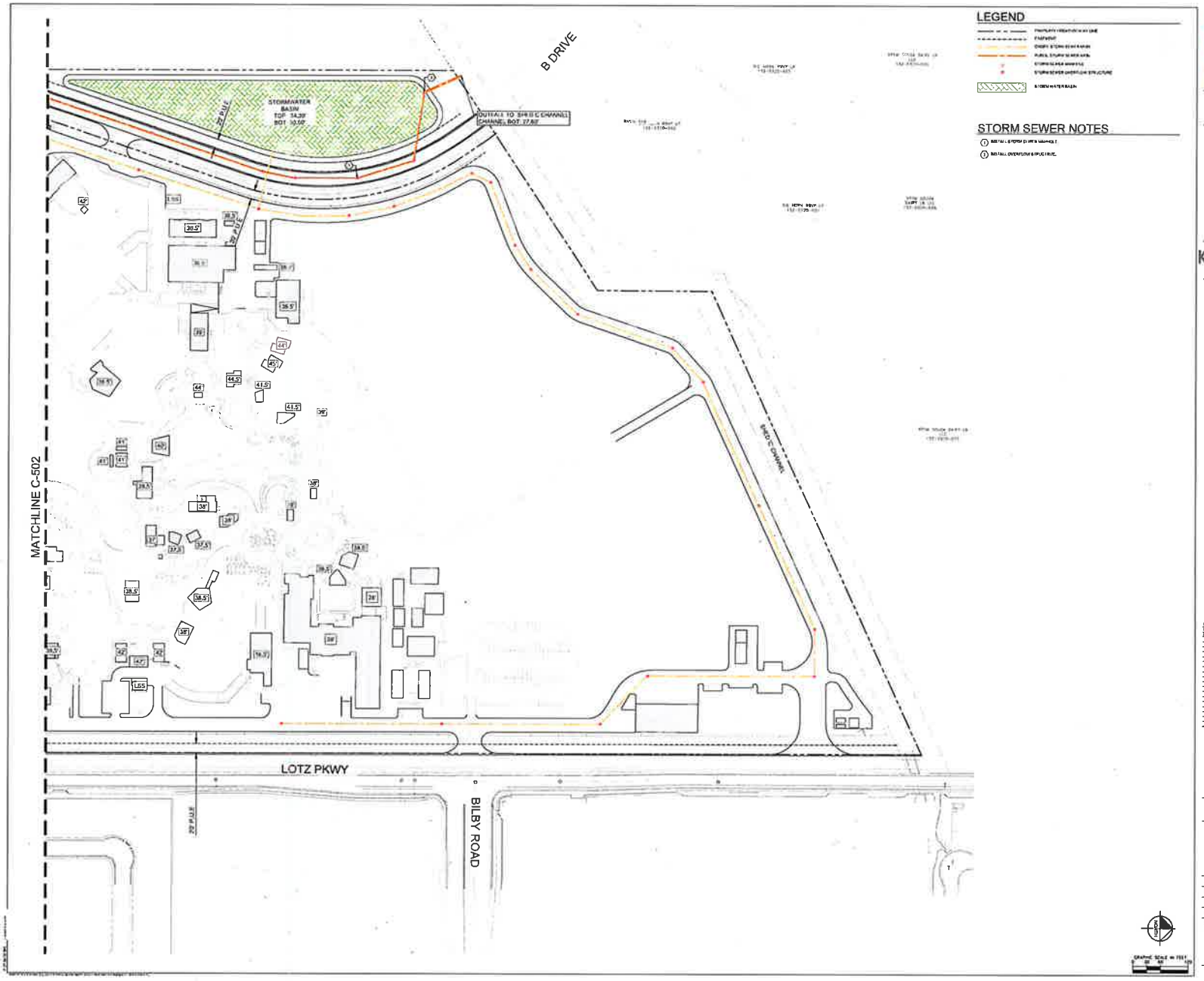
The New Zoo at Elk Grove

STORMWATER PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	26 OCTOBER, 2023
SCALE:	
CHECKED	SHR
SHEET	

C-501

Schematic Plans



SAC ZOO

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REV	DATE	DESCRIPTION
1	04/26/2023	For Review
2	10/06/2023	For Pricing

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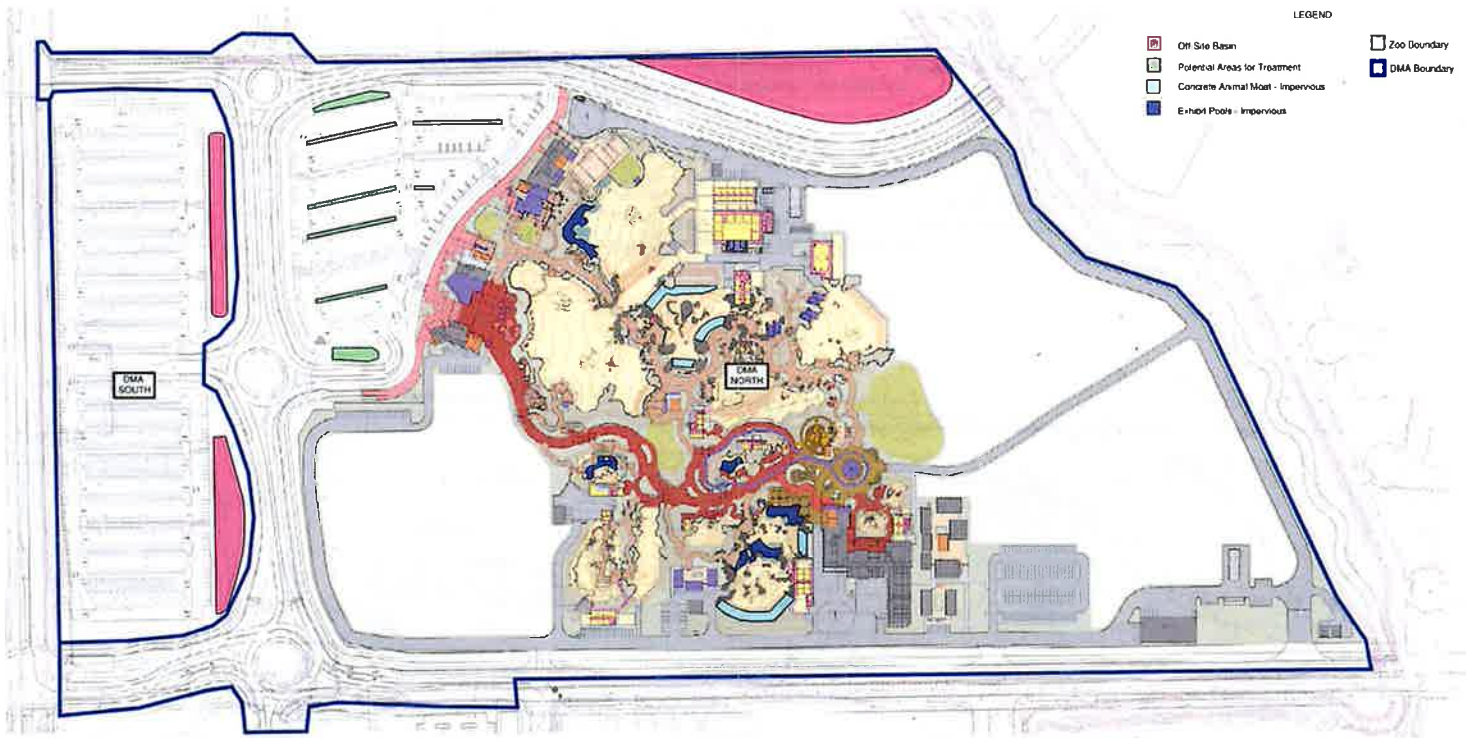
The New Zoo at Elk Grove

STORMWATER PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	06 OCTOBER, 2023
SCALE:	
CHECKED:	SHR
SHEET	C-502

Schematic Plans



BIORETENTION REQUIREMENTS TABLE - PHASE 1B			
DMA (#)	AREA (AC)	TREATMENT AREA REQUIRED (SF)	POTENTIAL AREAS FOR TREATMENT (SF)
SOUTH	13.48	29,300	29,300
NORTH	80.72	88,000	88,000
TOTAL	94.20	117,300	117,300

IMPERVIOUS AREA CALCULATIONS - PHASE 1B			
DMA (#)	AREA (AC)	PERVIOUS AREA (AC)	IMPERVIOUS AREA (AC)
SOUTH	13.48	4.42	9.06
NORTH	80.72	51.62	29.10
TOTAL	94.20	56.04	38.16

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STORMWATER QUALITY PLAN - PHASE 1B

SHEET SIZE: ARCH F (36" x 48")
DATE: 26 OCTOBER, 2023
SCALE:
CHECKED: SHR
SHEET

C-601

Schematic Plans

BIORETENTION REQUIREMENTS TABLE - FULL BUILD OUT			
DMA (#)	AREA (AC)	TREATMENT AREA REQUIRED (SF)	POTENTIAL AREAS FOR TREATMENT (SF)
SOUTH	13.48	29,300	29,300
NORTH	80.72	113,700	113,700
TOTAL	94.20	143,000	143,000

IMPERVIOUS AREA CALCULATIONS - FULL BUILD OUT			
DMA (#)	AREA (AC)	PERVIOUS AREA (AC)	IMPERVIOUS AREA (AC)
SOUTH	13.48	4.42	9.06
NORTH	80.72	44.04	36.68
TOTAL	94.20	48.46	45.74

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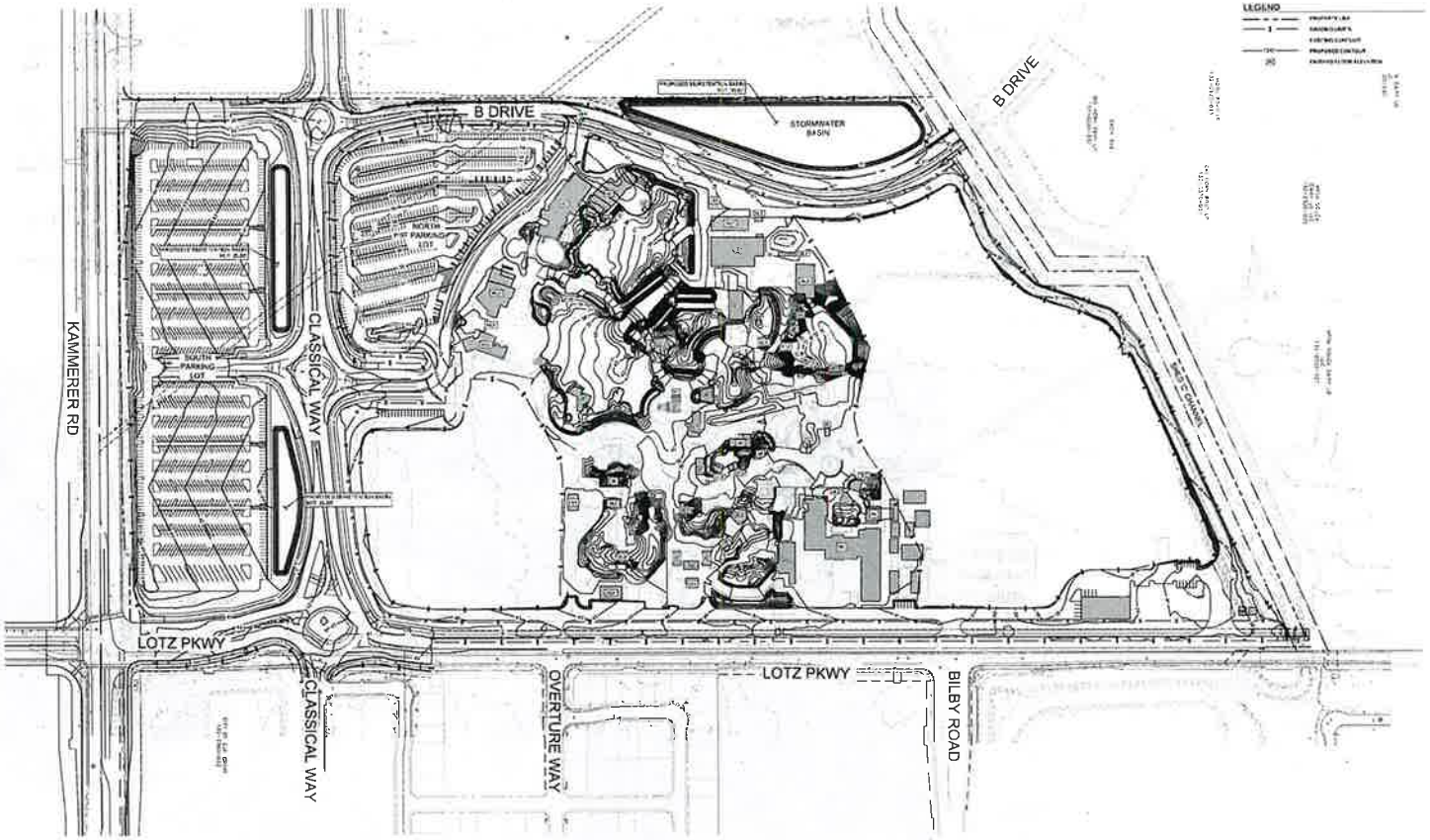
The New Zoo at Elk Grove

STORMWATER QUALITY PLAN - FULL BUILD OUT

C-602

Schematic Plans



PROJECT AREA	TOTAL AREA (AC)	TOTAL AREA (sf)	FILL (CY)	CUT (CY)	ROAD/PAVE	BIKE	SIDEWALK	Bldg	ROAD/PAVE	BIKE	SIDEWALK	Bldg	ROAD/PAVE	BIKE	SIDEWALK	Bldg	TOTAL PAVEMENT VOLUME	TOTAL VOLUME ADJUSTED
B-Drive	2.1833	95,105	1,076	(1,004)	48,131	14,110	11,479	-	1.67	0.92	1	-	2,977	481	425	-	(3,883)	(3,811)
Lotz	1.83	79,715	1,475	(45)	30,954	21,776	-	-	1.25	0.92	1	-	1,433	742	-	-	(2,175)	(745)
Perimeter Drive	12.74	554,954	16,293	(23,871)	215,508	-	-	-	1.67	0.92	1	-	13,330	-	-	-	(13,330)	(20,908)
North Parking	6.53	284,447	2,808	(9,365)	299,936	-	7,688	-	1.67	0.92	1	-	18,552	-	285	-	(18,836)	(25,394)
Classical	8.1	352,836	1,966	(2,756)	236,651	32,301	45,641	-	2.21	0.92	1	-	19,370	1,101	1,690	-	(22,161)	(22,951)
South Parking	14.06	612,454	40,329	(10,172)	382,980	-	24,755	-	1.67	0.92	1	-	23,668	-	917	-	(24,605)	5,552
Zoo Phase 1	25.31	1,102,504	65,480	(20,979)	167,643	-	196,338	122,515	1.67	0.92	1	1	10,369	-	7,272	4,538	(22,178)	22,323
Future Zoo Phase 2	24.30	1,058,377	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	95.05	4,140,391	129,428	(68,193)	1,381,803	68,187	285,900						89,719	2,323	10,589		(107,168)	(45,934)

TOTAL EARTHWORK = 75,000 CUT

WITH SWELL FACTOR = 1.25 AND 30% CONTINGENCY

GRAPHIC SCALE IN FEET
0 100 200

SAC ZOO

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The New Zoo at Elk Grove

MASS GRADING EXHIBIT - PHASE 1B

SHEET SIZE: ARCH F (30" x 42")
DATE: 06 OCTOBER 2023
SCALE:
CHECKED: SHR
SHEET:

C-700

Schematic Plans

THE NEW ZOO AT ELK GROVE

EXHIBIT C3

Schematic Plans

Date: September 22, 2023
Project Location: Elk Grove, CA
Prepared For: Sacramento Zoological Society

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Sheet Index:

Cover Sheet

Civil

Exhibits

Architecture

LSS

SAC ZOO

SH R StudFos

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

REV	DATE	DESCRIPTION
1	08/23/2023	For Review
2	10/06/2023	For Review

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

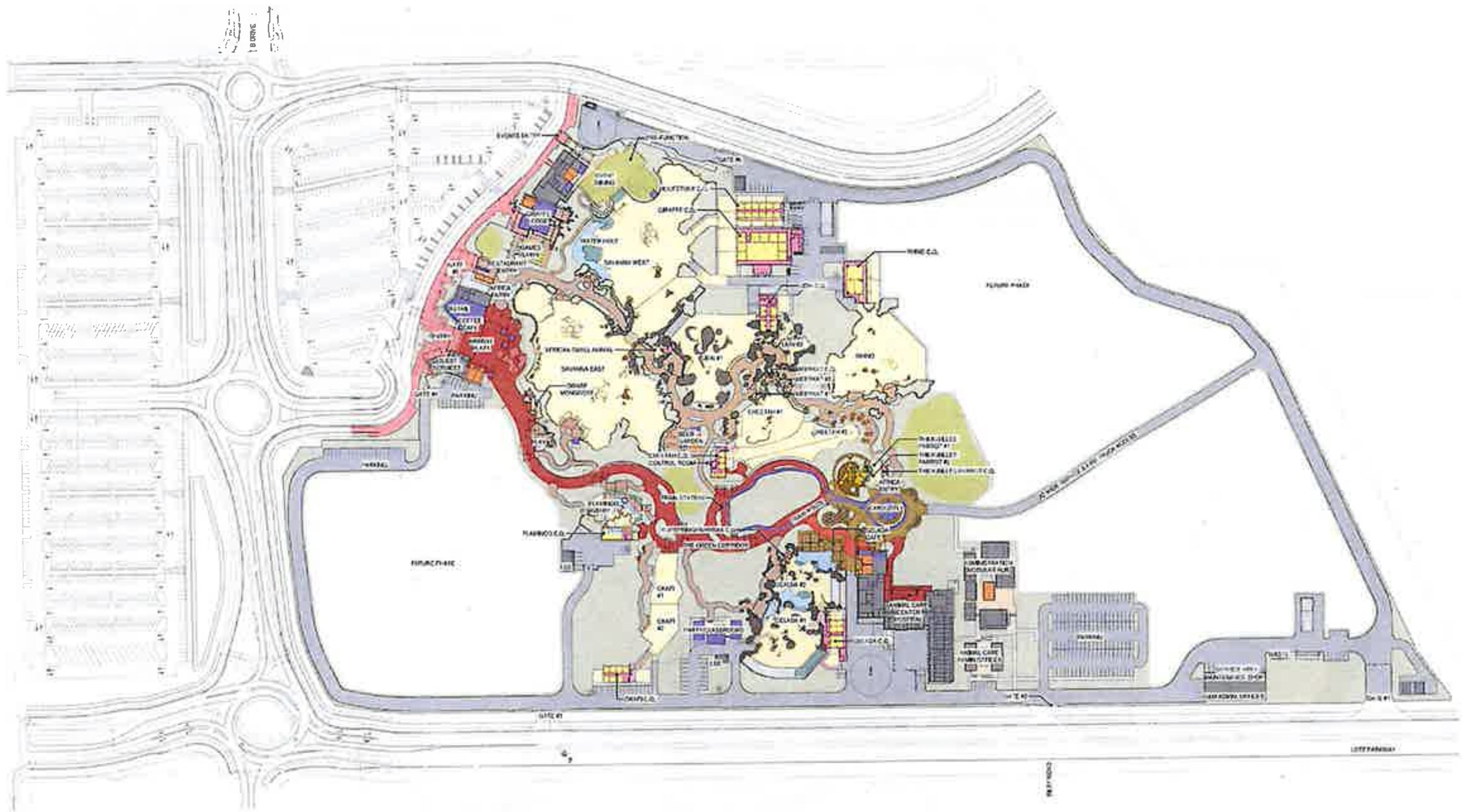
COVER SHEET

SHEET SIZE	ARCH E (36" x 48")
DATE	26 October 2023
SCALE	1/8" = 1'-0"
CHECKED	SAMMA

SHEET

G101

Schematic Plans



① Phase 1A Site Plan

Site Plan Legend

- Building
- Exhibit
- Service Area
- Visitor Path
- Water
- Lawn
- Planting Area

SAC ZOO

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NOLL & TAM ARCHITECTS

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The New Zoo at Elk Grove

PHASE 1A SITE PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	As indicated
CHECKED:	
SHEET:	

X010

Schematic Plans

2 Phase 1A Cost Zones Plan

ZONE 1: ENTRANCE OUTSIDE OF ZOO PERIMETER
1C: PEDESTRIAN PATH AND DROP-OFF ZONE, RESTAURANT SERVICE ROAD

ZONE 2: ENTRANCE INSIDE OF ZOO PERIMETER
2A: ADMINISTRATION / OFFICE BUILDING, RESTROOMS, GUEST SERVICES BUILDING, RETAIL BUILDING, EXHIBIT & CARE QUARTERS, PARKING & SERVICE AREA
2B: EDUCATION ENTRY & OFFICE, EDUCATION LAWN
2CA: LODGE (INDOOR & OUTDOOR DINING, BAR, KITCHEN, GAMES LAWN)
2CB: EVENTS LAWN, PATH TO ZOO, COVERED EVENTS ENTRY, RESTROOMS AND DRESSING ROOMS IN LODGE BUILDING

ZONE 3: SAVANNA
3A: SOUTH SAVANNA & RHINO HABITATS & CARE QUARTERS & FILTRATION
3C: LION HABITAT & CARE QUARTERS
3D: CHEETAH HABITAT & CARE QUARTERS
3E: SCREEN PLANTINGS
3H: OKAPI HABITAT & CARE QUARTERS

ZONE 4: GREEN CORRIDOR
4A MAIN PATHWAY, MONGOOSE HABITAT & CARE QUARTERS, SOUTH PLAY AREA, LAWN, TRAIN STATION, CAROUSEL
4B: MEERKAT EXHIBIT & CARE QUARTERS
4C: FLAMINGO EXHIBIT, CARE QUARTERS & FILTRATION
4F: LAWN
4G: CANOPY PLAY, THICK BILLED PARROT NETTED ENCLOSURE & CARE QUARTERS
4H: LAWN
4J: ANIMAL CARE CENTER & GUEST PAVILION, OFF EXHIBIT ANIMAL CARE, SERVICE YARD
4K: GELADA CAFE KITCHEN, ORDER & PICKUP COUNTER & OUTDOOR SEATING, RESTROOMS
4LA: GELADA EXHIBIT, CARE QUARTERS, FILTRATION & CLASSROOMS
4LB MULTIPURPOSE ROOMS, DECK AND PARKING

ZONE 5: PERIMETER SERVICE ROAD
5A: WEST SERVICE ROAD
5B: SERVICE ROAD, MAINTENANCE BUILDING AND GARBAGE COLLECTION
5C: EAST SERVICE ROAD

SAC ZOO

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NOLL & TAM ARCHITECTS

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APP.	DATE	DESCRIPTION
1	07/22/2022	For Review
2	07/29/2022	For Pricing

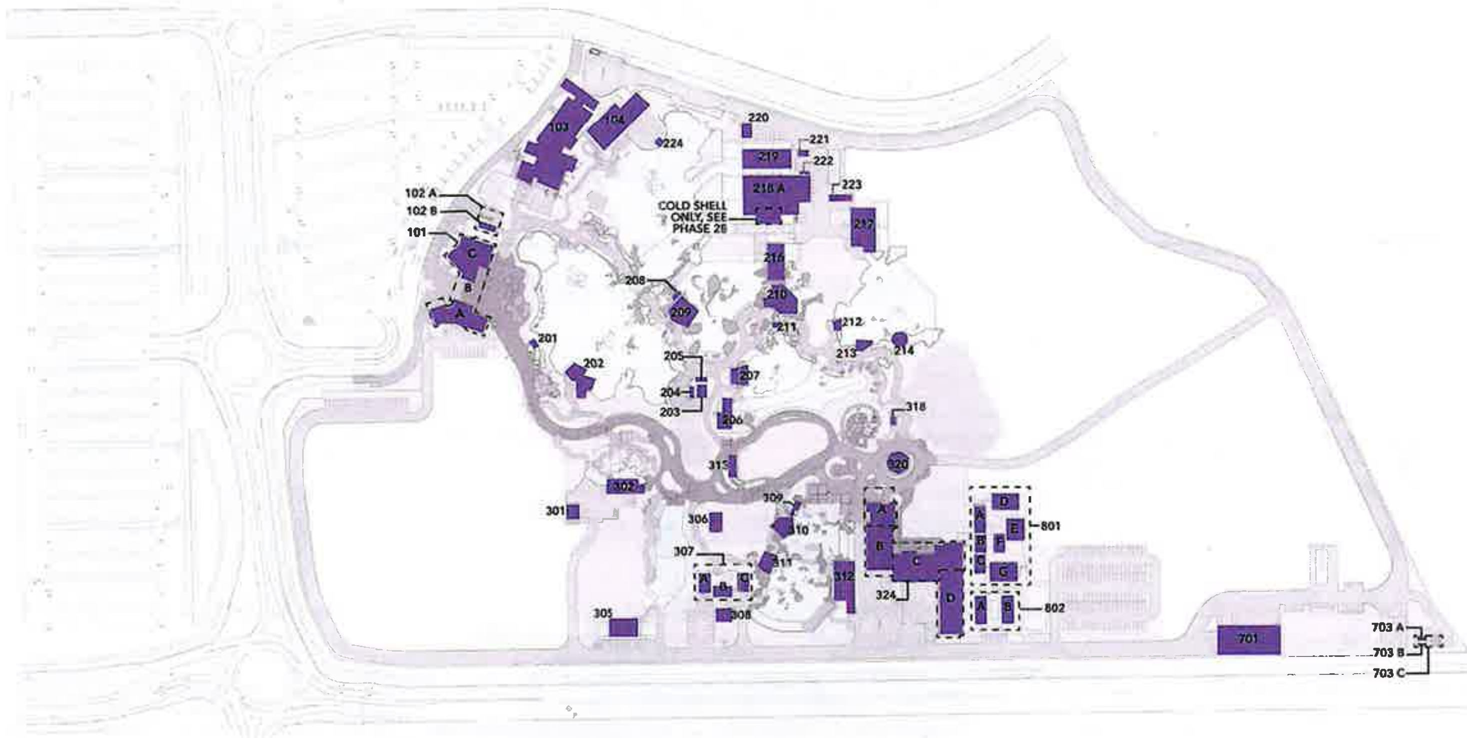
NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

PHASE 1A COST ZONES PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	08 October 2022
SCALE:	1" = 80'-0"
CHECKED:	SAMDA
SHEET:	X011

Schematic Plans



1 Phase 1A Building Plan

#		Building Name	Size (sf)
101	A	Guest Services/Restrooms/Ticketing	4,700
101	B	Breezeway	3,900
101	C	Retail	5,900
102	A	Education Entry Canopy	2,500
102	B	Education Entry Restrooms	500
103		The Lodge (interior)	12,000
103		The Lodge (exterior)	3,000
201		Dwarf Mongoose Care Quarters	200
202	A	Giraffe Feeding Shelter Canopy	2,200
202	B	Giraffe Feeding Shelter Sales Room	150
203		Beer Garden Restrooms	800
204		Beer Service	250
205		Beer Service	250
206		Cheetah Care Quarters	1,800
207		Cheetah View Shelter	1,400

#		Building Name	Size (sf)
208		Fennec Fox Care Quarters	300
209		Lion View Shelter 1	2,600
210		Lion View Shelter 2	4,800
211		Meerkat Care Quarters	150
212		Rhino View Shelter 1	420
213		Rhino View Shelter 2	720
214		Rhino Encounter Shelter	900
216		Lion Care Quarters	3,200
217		Rhino Care Quarters	4,400
218	A	Giraffe Care Quarters	11,900
219		Hornbook Care Quarters	4,200
220		Savanna LSS	3,800
221		Walk In Browse Cooler	200
222		Containerized Fodder System	8 ft x 20 ft
222		Hay Storage	300

#		Building Name	Size (sf)
223		Event Lawn Giraffe Feeding Shelter	150
302		Flamingo Care Quarters/Breeder	2,200
305		Okapi Care Quarters	2,200
306		Giant Tortoise Care Quarters	1,100
307	A	Multipurpose Room	1,000
307	B	Multipurpose Room	1,000
307	C	Multipurpose Room	1,000
308		Gelada LSS	550
309		Klipspringer/Hyrax Holding	430
310		Gelada View Shelter 2	1,500
311		Gelada View Shelter 1	1,300
312		Gelada Care Quarters	4,900
315		Train Depot	1,100
318		Parrot Care Quarters	250
320		Carousel Pavilion	1,500

#		Building Name	Size (sf)
324	A	Gelada Café	INCL. BELOW
324	B	Nutrition Center	INCL. BELOW
324	C	Vet Hospital, Offices	INCL. BELOW
324	D	Animal Holding	INCL. BELOW
324		Gelada Café + Animal Care Center (Vet Hospital, Quarantine & Nutrition Center)	25,000
701		Maintenance Shed/Shops	8,700
703	A	Containerized Fodder System	8 ft x 20 ft
703	B	Walk In Browse Cooler	200
703	C	Roof	1,500
801	A	Admin Modular 1	1,500
801	B	Admin Modular 2	900
801	C	Admin Modular 3	1,300
801	D	Admin Modular 4	2,300
801	E	Admin Modular 5	2,000
801	F	Restrooms - Prefabricated	1,000

#		Building Name	Size (sf)
801	G	Admin Modular 6	2,500
802	A	Animal Staff Modular 1	1,800
802	B	Animal Staff Modular 2	1,800

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The New Zoo at Elk Grove

PHASE 1A BUILDING PLAN

SHEET SIZE: ARCH E (36" x 48")
DATE: 06 October 2023
SCALE: 1" = 60'-0"
CHECKED:
SHEET

X012

Schematic Plans

(1) Phase 1A Habitat Plan

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PHASE 1A HABITAT PLAN

SHEET SIZE: ARCH E (36" x 48")

DATE: 08 October 2023

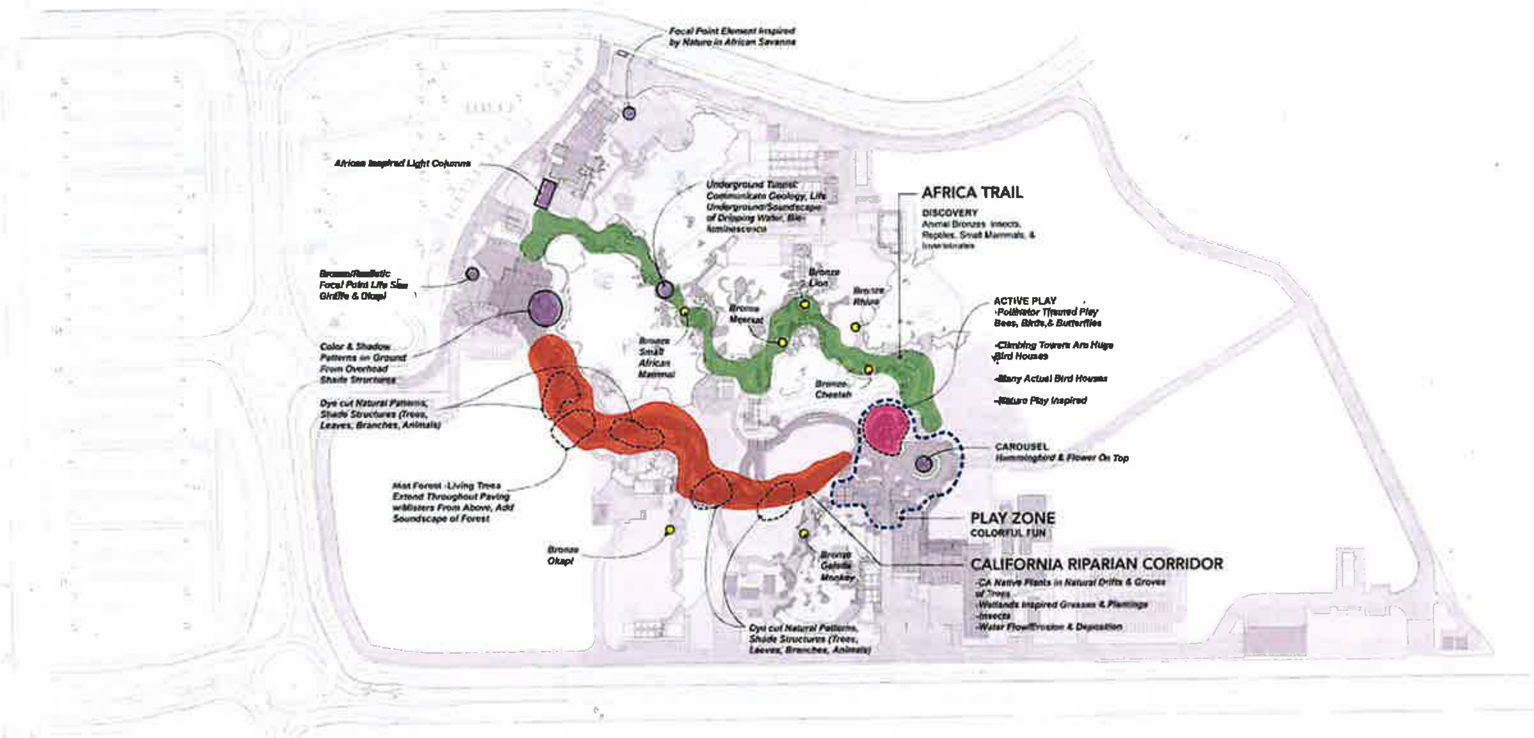
SCALE:

CHECKED:

SHEET:

X013

Schematic Plans



1 Phase 1 Zoo Art Diagram

SAC ZOO

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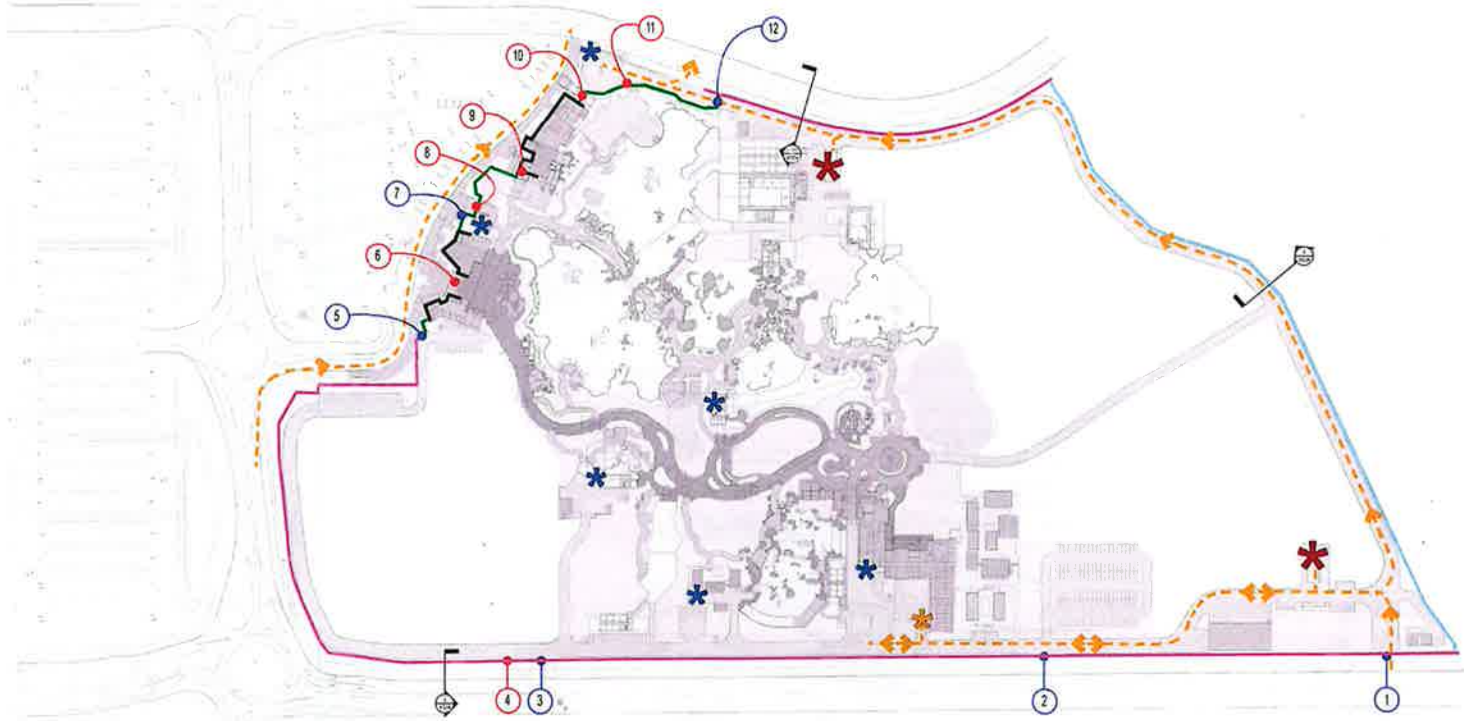
The New Zoo at Elk Grove

PHASE 1A ZOO ART DIAGRAM

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 60'-0"
CHECKED	
SHEET	

X014

Schematic Plans



Phase 1 Perimeter Fence, Service & Trash Plan

- BUILDING WALL AT ZOO PERIMETER
- BARRIER AT ZOO PERIMETER - ARCHITECTURAL WALL (HT. VARIES)
- BARRIER AT ZOO PERIMETER - 8' PRECAST CONCRETE PANEL WALL SECTIONS
- BARRIER AT ZOO PERIMETER - CHAINLINK FENCING WITH SLATS
- GARBAGE TRUCK ROUTE AND DIRECTION
- ANIMAL WASTE COLLECTION HUB: (2) 20 YARD DUMPSTERS, RECESSED W/ GARBAGE TRUCK RAMP
- ZOO WASTE COLLECTION HUB: BINS FOR SEPARATING TRASH, COMPOST, RECYCLABLES, RECESSED W/ GARBAGE TRUCK RAMP
- ANIMAL CARE WASTE BIN: RECESSED WITH RAMP FOR SMALL TRUCK COLLECTION
- ZOO WASTE LOCATION: BINS FOR SEPARATING TRASH, COMPOST, RECYCLABLES)
- PERIMETER VEHICLE GATE, SEE SCHEDULE
- PERIMETER PEDESTRIAN GATE, SEE SCHEDULE

#	TYPE	Description	Access Method
1	Vehicle	Main Entry/Exit Gate for Non-Zoo Vehicles	Attendant
2	Vehicle	Emergency Entry / Exit	Keycard
3	Vehicle	Emergency Entry / Exit	Keycard
4	Pedestrian	Zoo Staff Entry / Exit for Zoo	Keycard
5	Vehicle	Emergency Entry / Exit	Keycard
6	Pedestrian/ Small Vehicles	Main Entry/Exit Point for Zoo Guests	Ticket / Attendant
7	Vehicle	Service Gate for Cafe Back of House & Waste Area	Keycard
8	Pedestrian	Education Zoo Entry/Exit for School Groups	Ticket/Attendant
9	Pedestrian	Lodge Entry/Exit for Zoo Guests	Ticket/Attendant
10	Pedestrian	Events Zoo Entry for Guests	Ticket/Attendant
11	Pedestrian/ Small Vehicles	Events Zoo Entry for Service	Keycard
12	Vehicle	Entry / Exit Gate	Keycard

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The New Zoo at Elk Grove

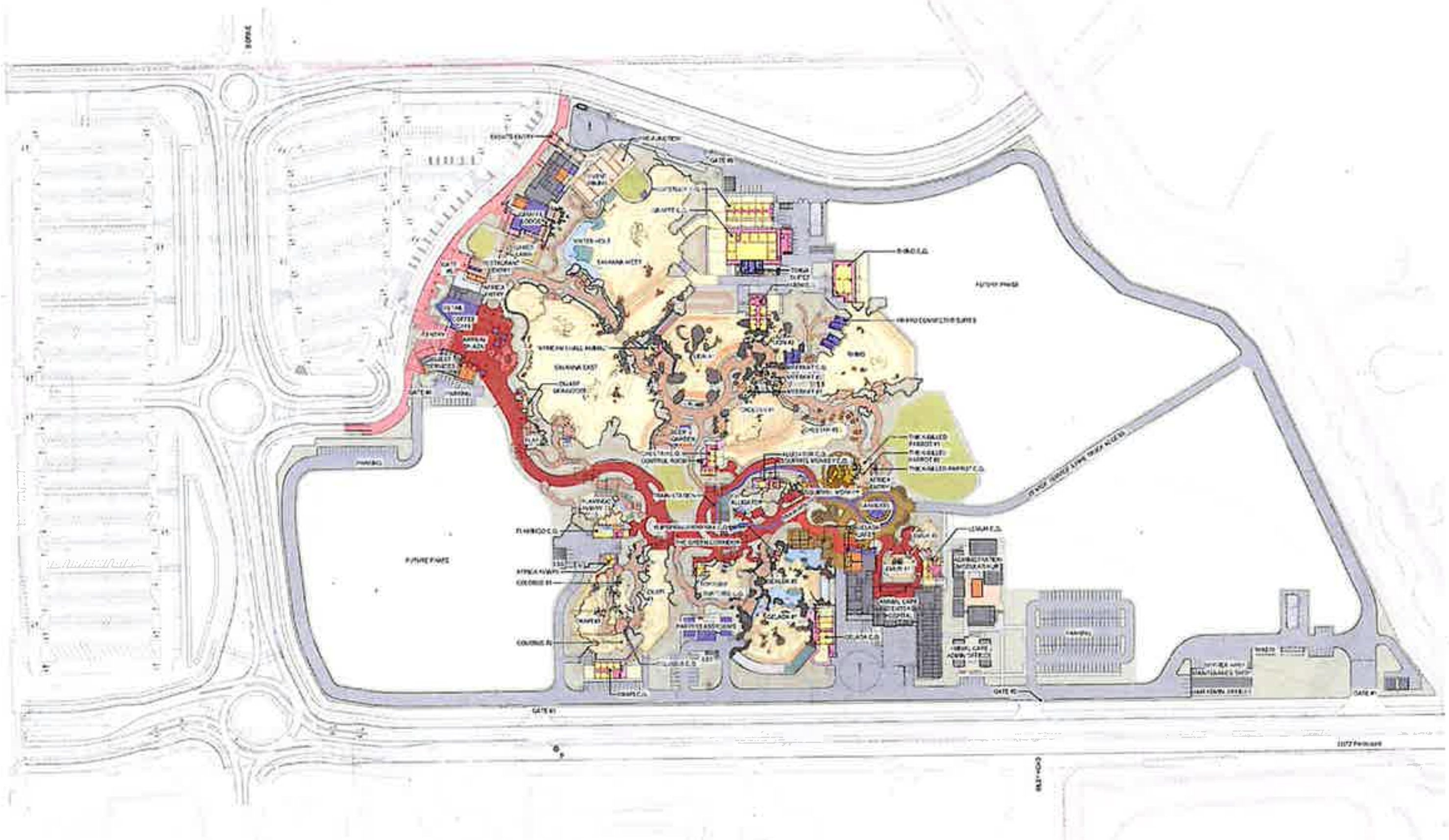
PHASE 1A PERIMETER FENCE, SERVICE & TRASH PLAN

SHEET SIZE: ARCH E (36" x 48")

SHEET

X015

Schematic Plans



(1) Phase 1B Site Plan

Site Plan Legend

- Building
- Exhibit
- Service Area
- Visitor Path
- Water
- Lawn
- Planting Area

SAC ZOO

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The New Zoo at Elk Grove

PHASE 1B SITE PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	As indicated
CHECKED:	
SHEET:	

X020

Schematic Plans

2 Phase 1B Cost Zones Plan

ZONE 2: ENTRANCE INSIDE OF ZOO PERIMETER
2CB: EVENTS PAVILION

ZONE 3: SAVANNA
3E: GUEST OVERNIGHT ACCOMMODATIONS
3H: IMPROVEMENTS TO OKAPI PADDOCK (ADDITION OF EARTH BANK PLANTERS),MULTISPECIES HABITAT (NETTED ENCLOSURE) FOR OKAPI & AFRICA BIRDS, AFRICA BIRDS CARE QUARTERS, COLOBUS HABITAT (NETTED ENCLOSURE) AND CARE QUARTERS

ZONE 4: GREEN CORRIDOR
4E: ALLIGATOR HABITAT, CARE QUARTERS & LSS; SQUIRREL MONKEY HABITAT & CARE QUARTERS
4F: TORTOISE HABITAT & CARE QUARTERS
4G: CANOPY PLAY FAMILY RESTROOMS
4H: LEMUR HABITATS (2 NETTED ENCLOSURES) & CARE QUARTERS

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

Kimley-Horn

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exp.

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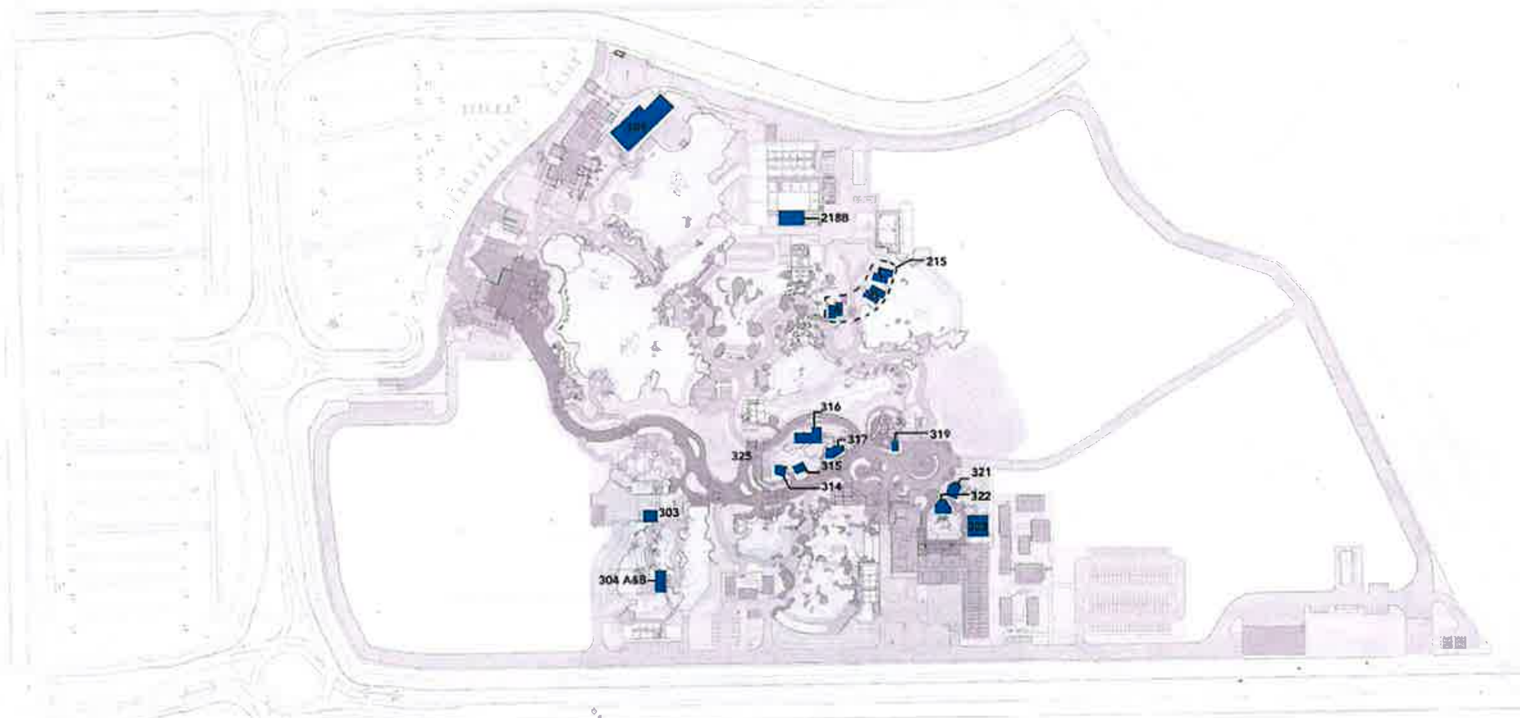
The New Zoo at Elk Grove

PHASE 1B COST ZONES PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 80'-0"
CHECKED:	SA/KUK

SHEET
X021

Schematic Plans



1 Phase 1B Building Plan

1" = 80'-0"

#		Building Name	Size (sf)
104		Events Pavilion	7,100
215	A	Overnight Guest Duplex	900
215	B	Overnight Guest Duplex	900
215	C	Overnight Guest Duplex	900
218	B	Overnight Guest Suite	1,400
303		Africa Aviary Care Quarters	800
304	A	Lvl 1: Vestibule	800
304	B	Lvl 2: Colobus Care Quarters	1,500
314		Alligator Viewing Shelter 1	500
315		Alligator Viewing Shelter 2	300
316		Alligator & Sq. Monkey Care Quarters	1,800
317		Squirrel Monkey Viewing Shelter	1,000
319		Play Area Restrooms & Lactation Room	850
321		Lemur View Shelter 1	800
322		Lemur View Shelter 2	1,000
323		Lemur Care Quarters	1,600
325		Alligator LSS	550

SAC ZOO

SH/R Studios

NOLL & TAM ARCHITECTS

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exp.

REV	DATE	DESCRIPTION
1	[illegible]	For Review
2	[illegible]	For Pricing

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

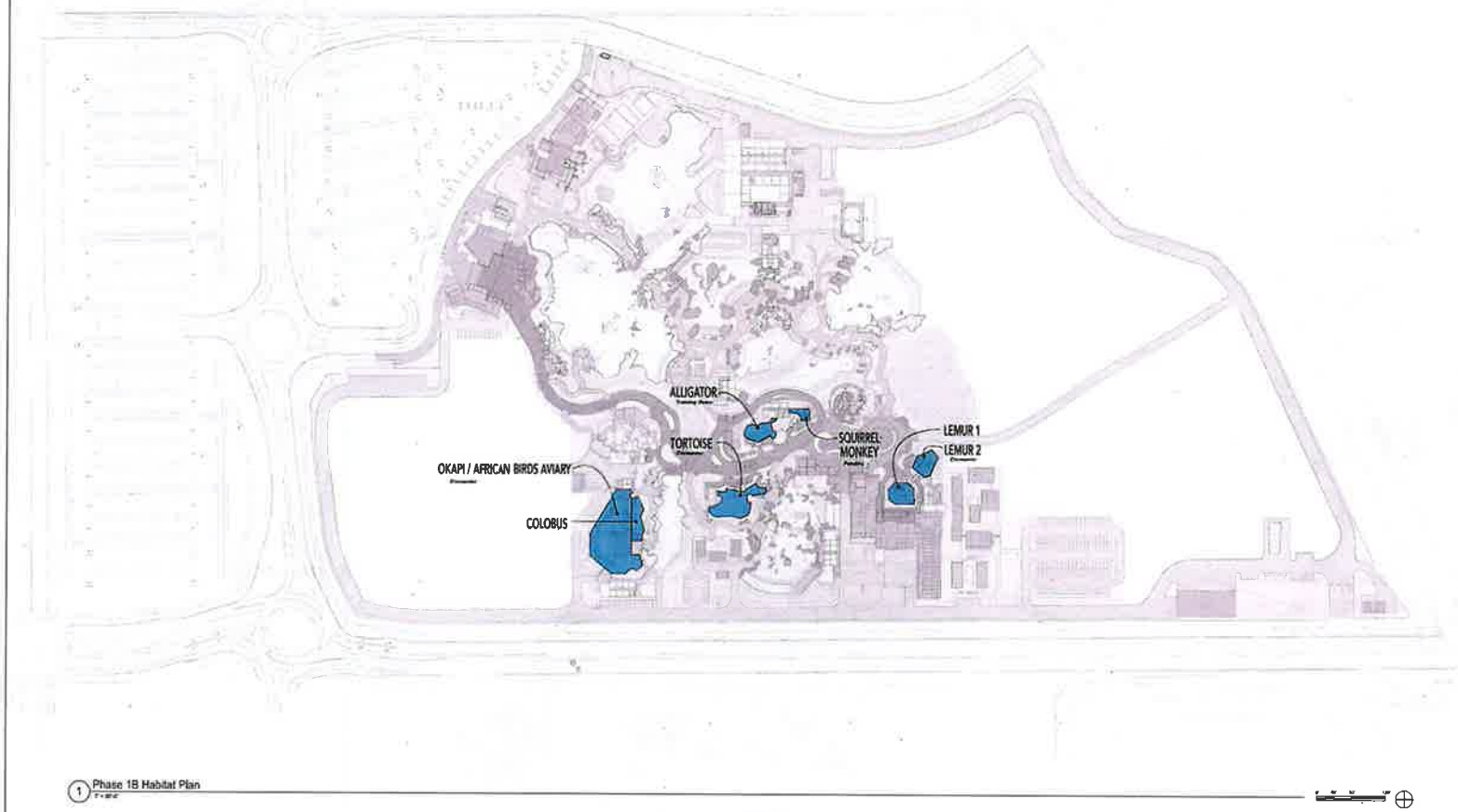
PHASE 1B BUILDING PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 80'-0"
CHECKED:	SM/KMc

SHEET

X022

Schematic Plans



1 Phase 1B Habitat Plan

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

NOT FOR CONSTRUCTION

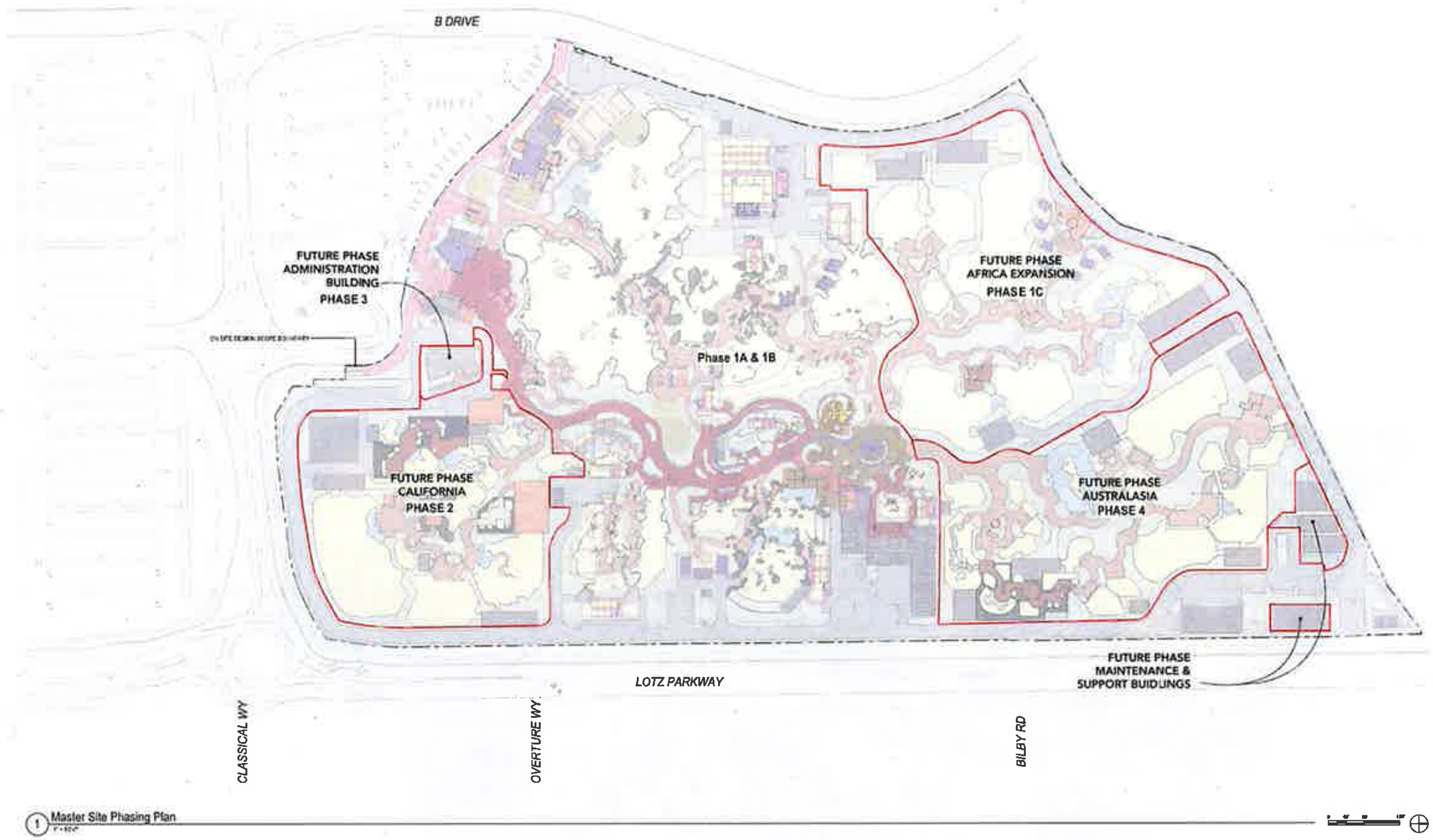
The New Zoo at Elk Grove

PHASE 1B HABITAT PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 60'-0"
CHECKED:	
SHEET	

X023

Schematic Plans



1 Master Site Phasing Plan

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exp.

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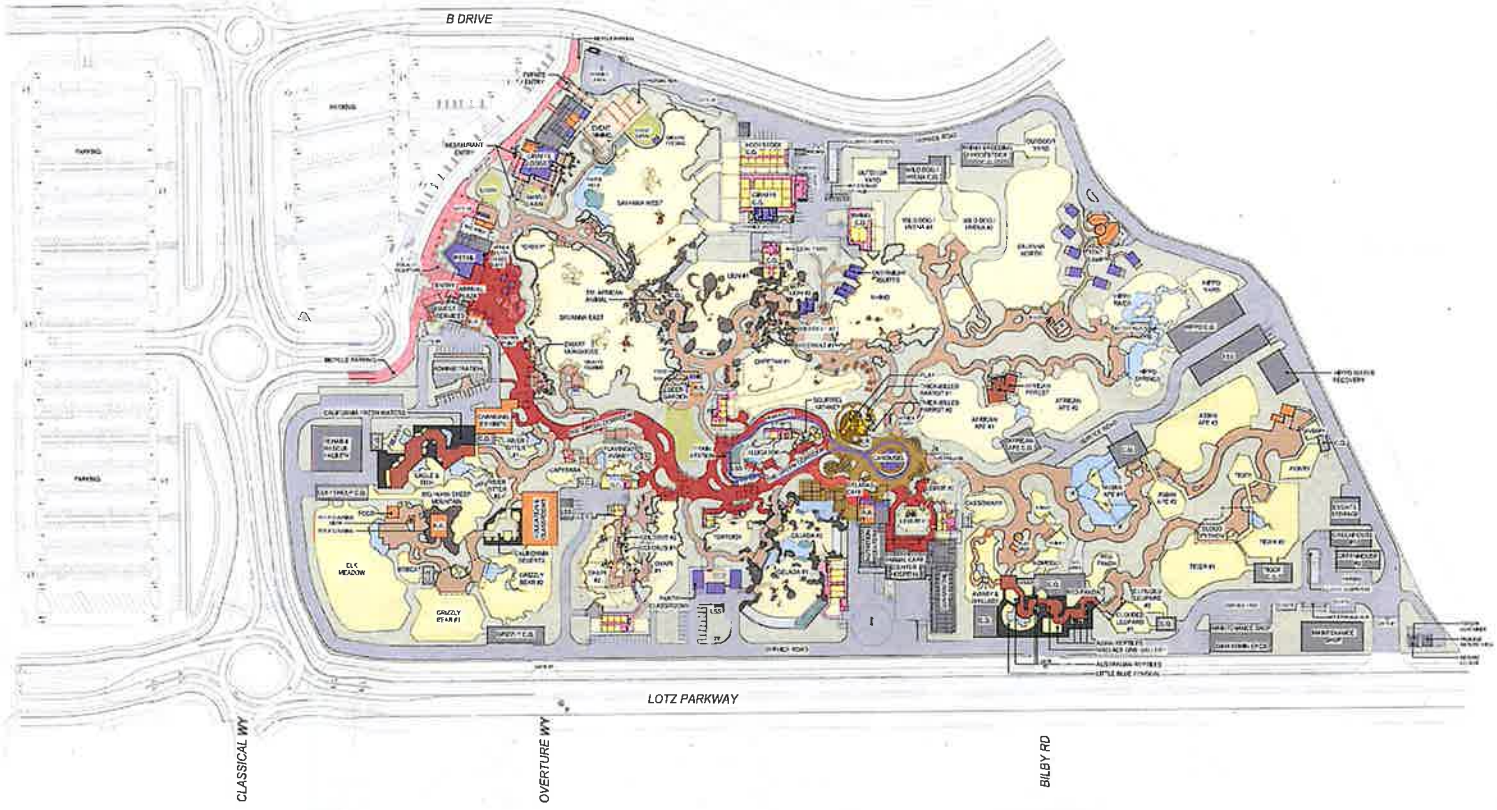
The New Zoo at Elk Grove

MASTER SITE PHASING PLAN

X030

Schematic Plans



1 Master Site Plan

Master Site Plan Legend

- Building
- Exhibit
- Service Area
- Visitor Path
- Water
- Lawn
- Planting Area

SAC ZOO

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NOLL & TAM ARCHITECTS

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TJP ENGINEERING

exp.

NOT FOR CONSTRUCTION

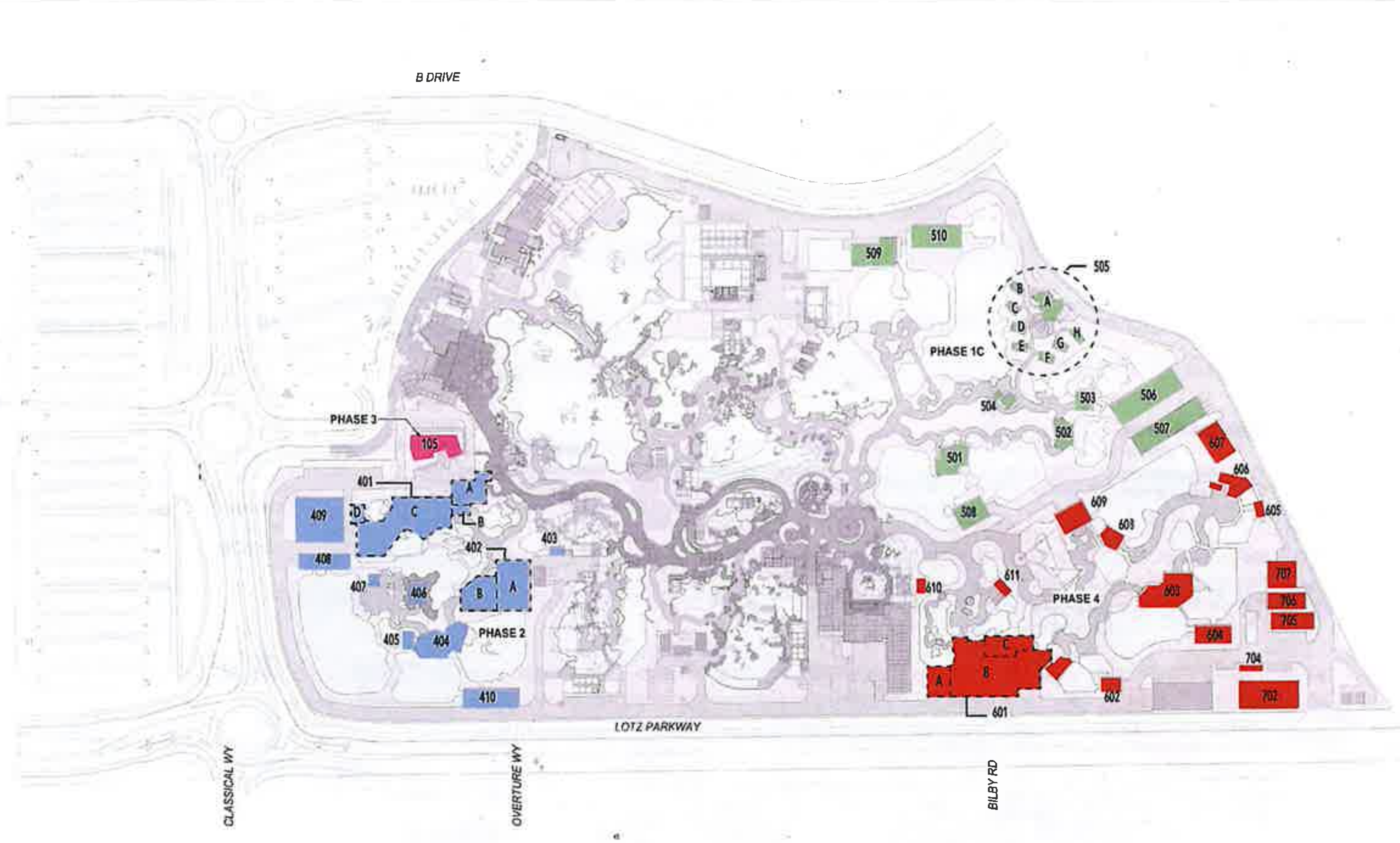
The New Zoo at Elk Grove

MASTER SITE PLAN

SHEET

X031

Schematic Plans



1 Master Building Plan

#		Building Name	Size (sf)
105		Administration / Staff Support & Offices (2-stories)	8,500
401	A	Changing Exhibits	5,000
401	B	Otter Care Quarters & LSS	3,000
401	C	California Fresh Waters Indoor Exhibits	18,600
401	D	Beaver Care Quarters	1,100
402	A	Education & Classrooms	9,000
402	B	California Deserts Indoor Exhibits	[illegible]
403		Capybara Care Quarters	800
404		Grizzly Bear View Shelter	[illegible]
405		Bobcat Care Quarters	1,000
406		Restrooms - California	1,800
407		Food Kiosk	500
408		Big Horned Sheep Care Quarters	1,600
409		Rescue & Rehab Facility	11,000
410		Grizzly Bear Care Quarters & LSS	5,000
501		African Ape Viewing	4,000
502		Hippo Springs View Shelter	1,800
503		Hippo River View Shelter	2,500
504		Food & Restroom Kiosk	800

#		Building Name	Size (sf)
505	A	Overnight Arrival Building	2,100
505	B	Accomodation 1	300
505	C	Accomodation 2	300
505	D	Accomodation 3	300
505	E	Accomodation 4	300
505	F	Accomodation 5	300
505	G	Accomodation 6	300
505	H	Accomodation 7	300
506		Hippo Care Quarters	10,000
507		Hippo+ Tiger Filtration	8,500
508		African Ape CQ	900
509		Wild Dog / Hyena CQ	3,700
510		Rhino Breeding / Hoofstock CQ	5,800
601	B	Wallace Line Gallery Indoor Exhibits	18,000
601	C	Komodo Dragon/Red Panda C.Q.	1,400
602		Clouded Leopard Care Quarters	3,000
603		Tiger View Shelter	4,800
604		Tiger Care Quarters	3,500
605		Aviary Care Quarters 1	800

#		Building Name	Size (sf)
[illegible]		Restrooms - Asia	1,000
606		Aviary Viewing Shelters	2,900
608		Food Kiosk	300
607		North Water Recovery	4,800
608		Asian Ape View Shelter	2,000
609		Asian Ape Care Quarters	7,500
610		Cassowary Care Quarters	300
611		Australian Aviary Care Quarters	300
612		Clouded Leopard View Shelter	1,400
702		Maintenance Shed/Shops	8,500
705		Greenhouse 2	3,800
706		Greenhouse 1	3,800
707		Event Storage	3,800

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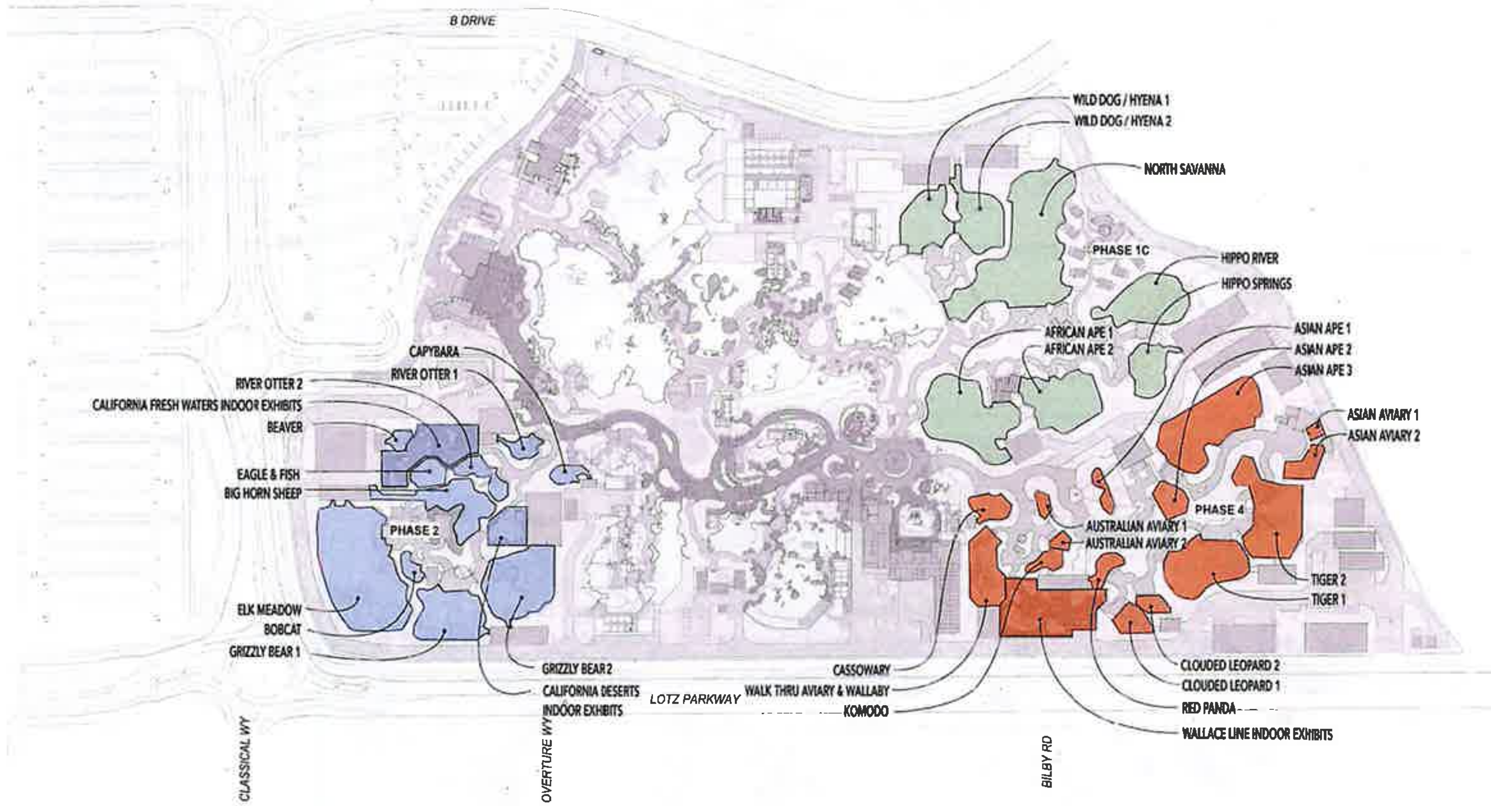
The New Zoo at Elk Grove

MASTER BUILDING PLAN

SHEET SIZE: ARCH E (36" x 48")
DATE: 06 October 2022
SCALE: 1" = 50'-0"
CHECKED: [illegible]
SHEET

X032

Schematic Plans



1 Master Habitat Plan

Master Habitat Plan Legend

- PH 1C Habitats
- PH 3 Habitats - California
- PH 4 Habitats - Australasia

** See Sheet for Animal and Pool Program

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The New Zoo at Elk Grove

MASTER HABITAT PLAN

SHEET SIZE: ARCH E (36" x 48")

DATE: 06 October 2022

SCALE: As indicated

CHECKED:

SHEET

X033

Schematic Plans

Animal Program

Phase 1A	
Dwarf Mongoose	
Habitat Size:	215 sf
Species (numbers):	Dwarf Mongoose (#?) Rock Hyrax (#?)
Savanna East & West	
Habitat Size (sf):	Savanna West: 52,150 sf Savanna East: 23,575 sf Creep: 5,150 sf Total Savanna:
Species (numbers):	Small antelope (0.8.12) Medium Antelope (0.0.15) Common Eland (1.2.0) Ostrich (0.0.4) Giraffe (2.14.0) Grey Crowned Crane (0.0.4) Zebra (1.3.0)
Lion	
Habitat Size (sf):	Lion 1: 16,340 sf Lion 2: 6,000 sf Total Lion:
Species (numbers):	Lion (1.3.0)
Cheetah	
Habitat Size (sf):	15,230 sf
Cheetah Run Length (ft):	300 ft
Cheetah Run Width (ft):	22 ft
Species (numbers):	Cheetah (#?)
Fennec Fox	
Habitat Size (sf):	430 sf
Species (numbers):	TBD
Meerkat	
Habitat Size (sf):	Meerkat 1: 1,000 sf Meerkat 2: 600 sf Total:
Species (numbers):	Meerkat (#?)
Rhino	
Habitat Size (sf):	28,380 sf
Species (numbers):	White Rhino (1.3.2)
Flamingo Aviary and Flighted Birds	
Habitat Size (sf):	9,815 sf
Species (numbers):	Flamingo (#?)
Okapi	
Habitat Size (sf):	Okapi 1a: 4,925 sf Okapi 1b: 7,220 sf Total: 12,145 sf
Species (numbers):	Black Crowned Crane (1.1.0)
Gelada + Hyrax	
Habitat Size (sf):	Gelada 1: 15,500 sf Gelada 2: 8,500 sf Total: 24,000 sf
Species (numbers):	Gelada (0.0.30) Klipspringer (1.1.0) Hyrax (0.0.6)
Thick Billed Parrot	
Habitat Size (sf):	Habitat 1: 1,290 sf Habitat 2: 1,385 sf
Species (numbers):	Thick Billed Parrot

Phase 1B (Add Alternates)	
Africa Aviary: Okapi & Birds	
Habitat Size (sf):	Aviary and Okapi accessible area: 14,000 sf
	Okapi accessible area: 7,900 sf
Species (numbers):	Okapi (1.1.1) Black Crowned Crane (1.1.0) Vulturine Guinea Fowl (#?) Turaco (#?) Bee Eaters (#?)
Africa Aviary: Primates	
Habitat Size (sf):	Colobus 1: 2,500 sf
Species (numbers):	Colobus (1.3.2) Guenon (1.3.2)
Giant Tortoise	
Habitat Size (sf):	6,620 sf
Species (numbers):	Giant Tortoise (#?)
Alligator	
Habitat Size (sf):	2,500 sf
Species (numbers):	North American Alligator (#?)
Squirrel Monkey	
Habitat Size (sf):	2,190 sf
Species (numbers):	Squirrel Monkey (#?)
Lemur	
Habitat Size:	Lemur 1: 2,800 sf Lemur 2: 2,300 sf
Species (numbers):	Lemur (#?)

Future Africa	
Wild Dog/Hyena	
Habitat Size:	Hyena 1: 12,000 sf Hyena 2: 12,500 sf
Species (numbers):	Wild Dog (0.0.5) Hyena (#)
North Savanna	
Habitat Size:	45,500 sf
Species (numbers):	Ostrich (0.0.4) White Rhino (1.3.2) Zebra (1.3.0)
African Ape	
Habitat Size:	Ape 1: 24,000 sf Ape 2: 17,000 sf
Species (numbers):	TBD
Hippo	
Habitat Size:	Hippo 1 (Hippo Springs Habitat): 7,990 sf Hippo 2 (Hippo River Habitat): 16,490 sf Hippo Encounter: 760 sf
Species (numbers):	Hippopotamus (1.0.2)

Future California	
Beaver	
Habitat Size:	2,070 sf
Species (numbers):	America Beaver (#?)
Big Horn Sheep	
Habitat Size:	12,670 sf
Species (numbers):	Big Horn Sheep (#?)
Bobcat	
Habitat Size:	2,535 sf
Species (numbers):	Bobcat (#?)
California Deserts Interior Exhibits	
Habitat Size:	Total Building: 6,410 sf Area 1: 100 sf Area 2: 100 sf Area 3: 155 sf Area 4: 50 sf Area 5: 50 sf Area 6: 55 sf Area 7: 340 sf Area 8: 600 sf
Species (numbers):	TBD
California Fresh Waters Interior Exhibits	
Habitat Size:	Total Building: 16,531 sf Area 1: 80 sf Area 2: 115 sf Area 3: 120 sf Area 4: 155 sf Area 5: 115 sf Area 6: 80 sf Area 7: 55 sf Area 8: 145 sf Area 9: 135 sf
Species (numbers):	TBD
Capybara	
Habitat Size:	2,855 sf
Species (numbers):	Capybara (#?)
Eagle & Fish	
Habitat Size:	3,960 sf
Species (numbers):	TBD
Elk Meadow	
Habitat Size:	41,975 sf
Species (numbers):	North American Elk (#?)
Grizzly Bear	
Habitat Size:	Grizzly Bear 1: 15,435 sf Grizzly Bear 2: 20,610 sf
Species (numbers):	North American Brown Bear (#?)
River Otters	
Habitat Size:	River Otter 1: 3,050 sf River Otter 2: 5,265 sf
Species (numbers):	North American River Otter (#?)
Sturgeon	
Habitat Size:	490 sf in California Fresh Waters Building
Species (numbers):	Sturgeon (#?)
TBD California Sierra Nevada Mountains Exhibits	
Habitat Size:	Area 1: 110 sf Area 2: 165 sf Area 3: 170 sf
Species (numbers):	TBD

Future Australasia	
Australia Aviaries	
Habitat Size:	Aviary 1: 1,650 sf Aviary 2: 1,340
Species (numbers):	TBD
Cassowary	
Habitat Size:	4,450 sf
Species (numbers):	Cassowary (#?)
Aviary & Wallaby	
Habitat Size:	11,140 sf
Species (numbers):	TBD
Komodo Dragon	
Habitat Size:	Total Building: 2,740 sf
Species (numbers):	TBD
Fish in Play Area	
Habitat Size:	30 sf
Species (numbers):	TBD
Wallace Line Gallery	
Habitat Size:	Total building: 22,435 sf Little Blue Penguin: 2,795 sf Komodo Dragon: 915 sf Australian Reptile 1: 720 sf Australia Reptile 2: 145 sf Australia Reptile 3: 440 sf Red Panda: 1,770 sf Asian Reptile 1: 1,180 sf Asian Reptile 2: 130 sf Asian Reptile 3: 130 sf Asian Reptile 4: 35 sf
Species (numbers):	TBD
Asian Ape	
Habitat Size:	Asian Ape 1: 2,350 sf Asian Ape 2: 4,995 sf Asian Ape 3: 24,640 sf
Species (numbers):	TBD
Asia Aviaries	
Habitat Size:	Aviary 1: 1,230 sf Aviary 2: 4,250 sf
Species (numbers):	Hornbill (#?) Pheasant (#?)
Blood Python	
Habitat Size:	170 sf
Species (numbers):	Blood Python (#?)
Clouded Leopard	
Habitat Size:	Clouded Leopard 1: 4,225 sf Clouded Leopard 2: 2,455 sf
Species (numbers):	Clouded Leopard (1.1.?)
Red Panda	
Habitat Size:	3,105 sf
Species (numbers):	Red Panda (#?)
Tiger	
Habitat Size:	Tiger 1: 17,690 sf Tiger 2: 19,330 sf
Species (numbers):	Tiger (#?)

Pool Program

		Filtered?	Salt or Fresh	Avg. Depth		Max. Depth		Surface Area		Volume		Surface Elevation	Heated Temp Range	Cooled Temp. Range	Fish?
[illegible]															
Savanna 1 & 2															
1.1.1	Water Hole	Yes	Fresh	4.63	ft	8	ft	4,600	sf	125,900	gal	34	No Heat	NA	No
Flamingo Aviary															
1.2.1	Flamingo Habitat Pool	Yes	Fresh	2	ft	4	ft	1,580	sf	24,800	gal	33	No Heat	NA	No
1.2.2	Flamingo Holding Pool in Care Quarters	Yes	Fresh	1.5	ft	3	ft	300	sf	4,500	gal	38	No Heat	NA	No
Gelada															
1.3.1	Gelada Moat Barrier	Yes	Fresh	1.92	ft	4	ft	2,470	sf	35,400	gal	35	No Heat	NA	No
1.3.2	Gelada Upper Pool	Yes	Fresh	3.21	ft	4	ft	2092	sf	51,900	gal	35	No Heat	NA	No
1.3.3	Gelada Lower Pool	Yes	Fresh	2	ft	3	ft	630	sf	5,300	gal	33	No Heat	NA	No
[illegible]															
Alligator															
2.1.1	Alligator Habitat Pool	Yes	Fresh	3	ft	5	ft	1,050	sf	22,700	gal	36	45-50 degrees	NA	No
2.1.2	Alligator Holding Pool in Care Quarters	Yes	Fresh	2	ft	2	ft	395	sf	3,800	gal	37	45-50 degrees	NA	No
Tortoise															
2.2.1	Tortoise Habitat Pool	No	Fresh	1	ft	1	ft	100	sf	1,000	gal	36.5	No Heat	NA	No
2.2.2	Tortoise Holding Pool in Care Quarters	No	Fresh	1	ft	1	ft	45	sf	140	gal	38.5	No Heat	NA	No
2.2.3	Tortoise Holding Pool in Care Quarters	No	Fresh	1	ft	1	ft	45	sf	140	gal	38.5	No Heat	NA	No
Okapi															
3.1.1	Okapi Aviary Pool	No	Fresh	1	ft	2	ft	90	sf	600	gal	39.5	No Heat	NA	No

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REV	DATE	DESCRIPTION
1	[illegible]	[illegible]
2	[illegible]	[illegible]

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

ANIMAL AND POOL PROGRAM INFORMATION

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1" = 100'-0"
CHECKED	SMMJE
SHEET	X034

Schematic Plans

1 Phase 1a and 1b Overall Materials Key Plan

Materials Plan Legend

Fencing and Barriers (see diagram):

- Zoo Perimeter Wall
- Animal Barrier
- Guest Barrier
- Reed Barrier
- Roof Edge Above
- Water Edge
- Mesh

Paving Types:

- Asphalt
- Typical Concrete Paving w/Broom Finish
- Integral Colored Concrete Paving w/ Broom Finish and Artistic Joint Pattern
- Integral Colored Concrete Paving w/ Broom Finish
- Integral Colored Concrete Paving w/ Broom finish
- Rubber Play Surface

Paving Types:

- Integral Colored Concrete Paving w/ Broom Finish
- Exterior Animal Area - Substrates Vary Per Animal Program
- Interior Animal Area - Substrates Vary Per Animal Program
- Exterior Keeper Area - Typ. Sealed Concrete w/ Broom Finish
- Interior Keeper Area - Typ. Sealed Concrete w/ Broom Finish
- Filtration Support Wetland

- Water
- Lawn
- Shrubs and Trees
- Building - See Arch for Tier 1 and LSS Plans
- Revenue Opportunities
- Restrooms

Symbols:

- Shotcrete Wall - Graded Mud Bank
- Shotcrete Wall - Boulder/Kopje Texture
- Natural Boulders
- Artificial Deadfall/Branches
- Natural Deadfall/Branches
- Gate
- CIP Site Wall/Sculptural Element
- Shade Canopy
- Tree Grate
- Cafe Table and Chairs with Umbrella
- Cheetah Habitat 'Jeep' Seating (Open-Sided Safari Jeep w/4 Rows of Seating and Canopy, non functioning)
- Playground Climbing Element

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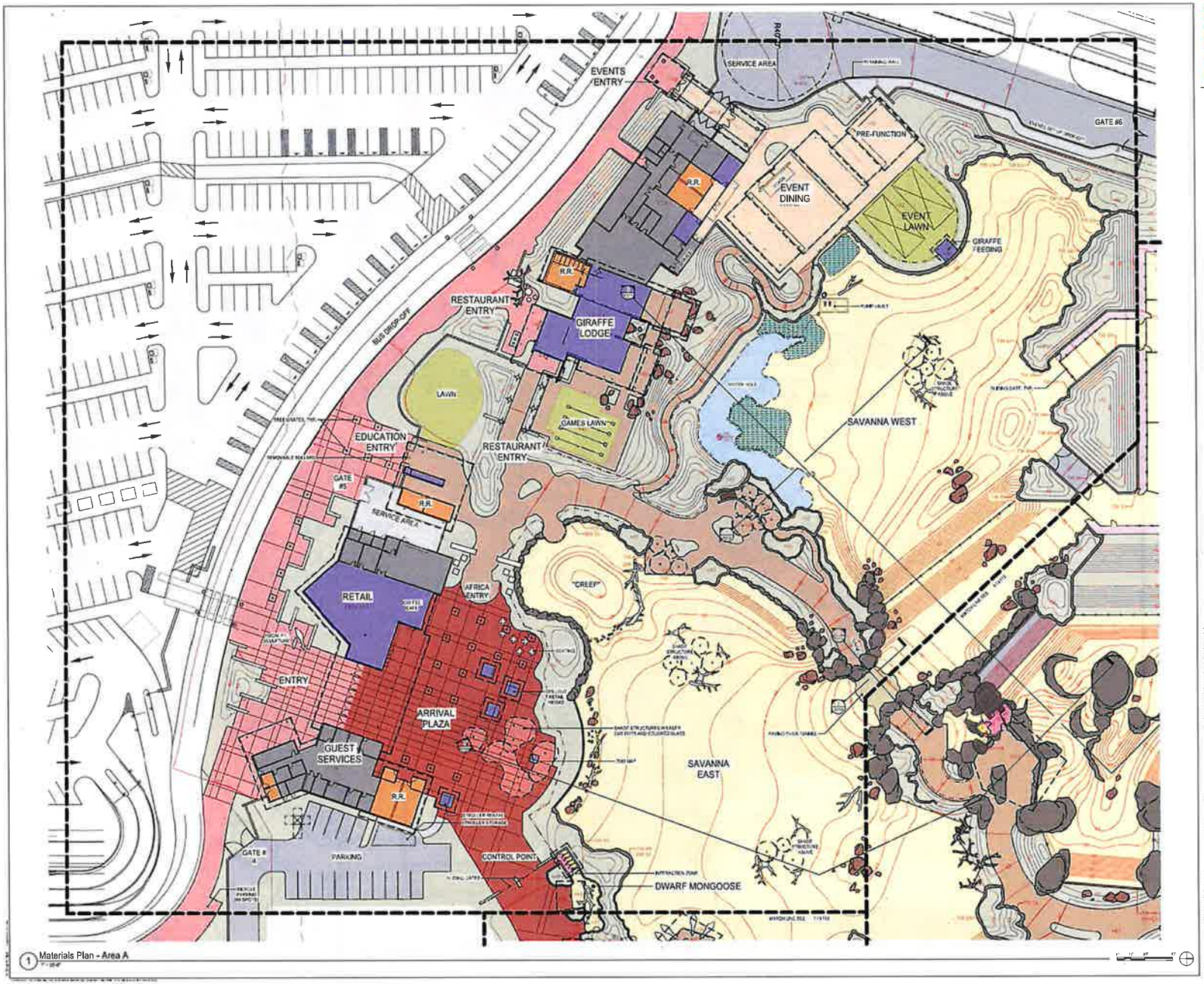
PHASE 1A AND 1B OVERALL MATERIALS PLAN AND LEGEND

SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2021
SCALE	As indicated
CHECKED	SHR/NT
SHEET	X110

Schematic Plans



1 Materials Plan - Area A

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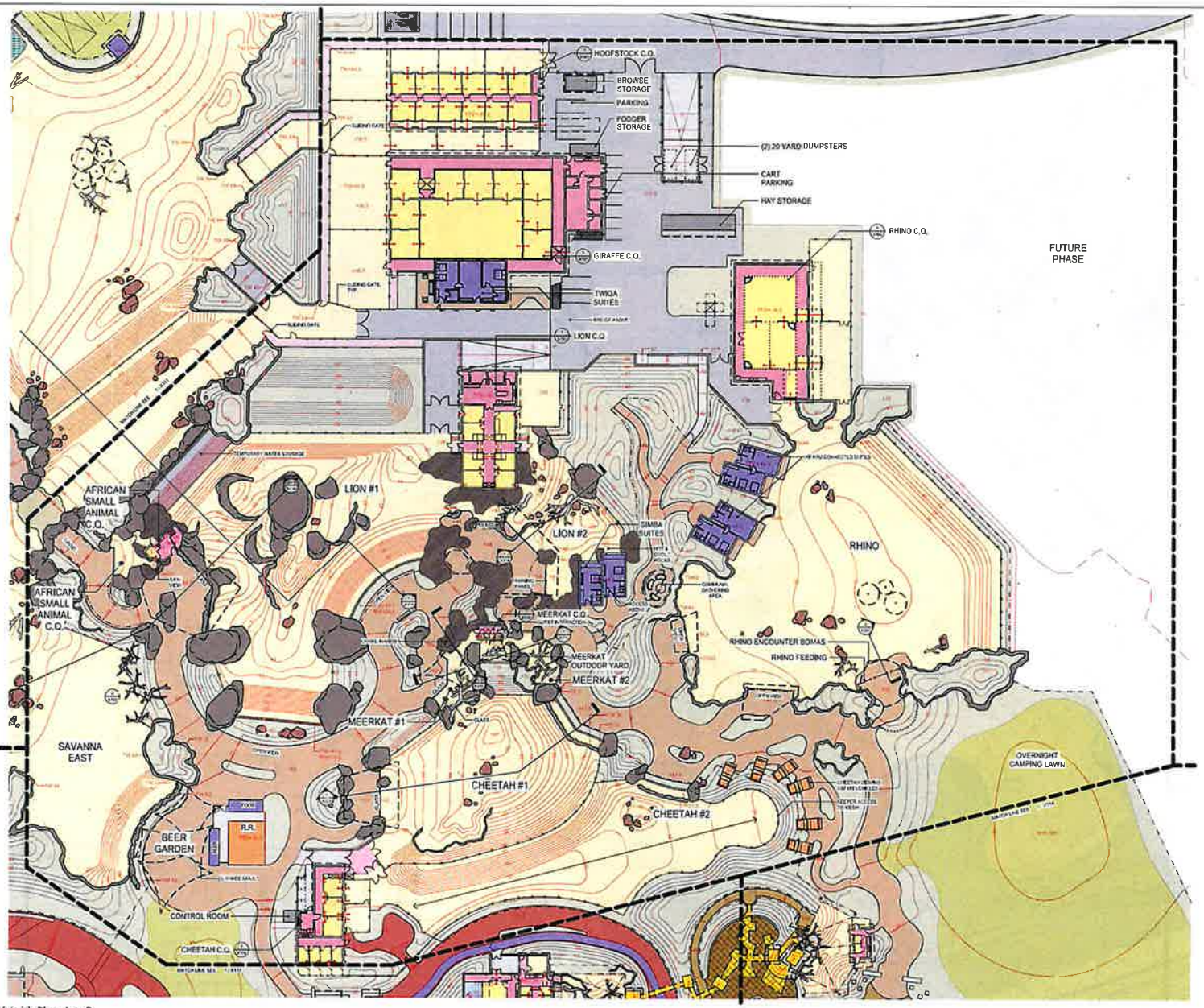
The New Zoo at Elk Grove

MATERIALS PLAN - AREA A

X111

Schematic Plans



1 Materials Plan - Area B

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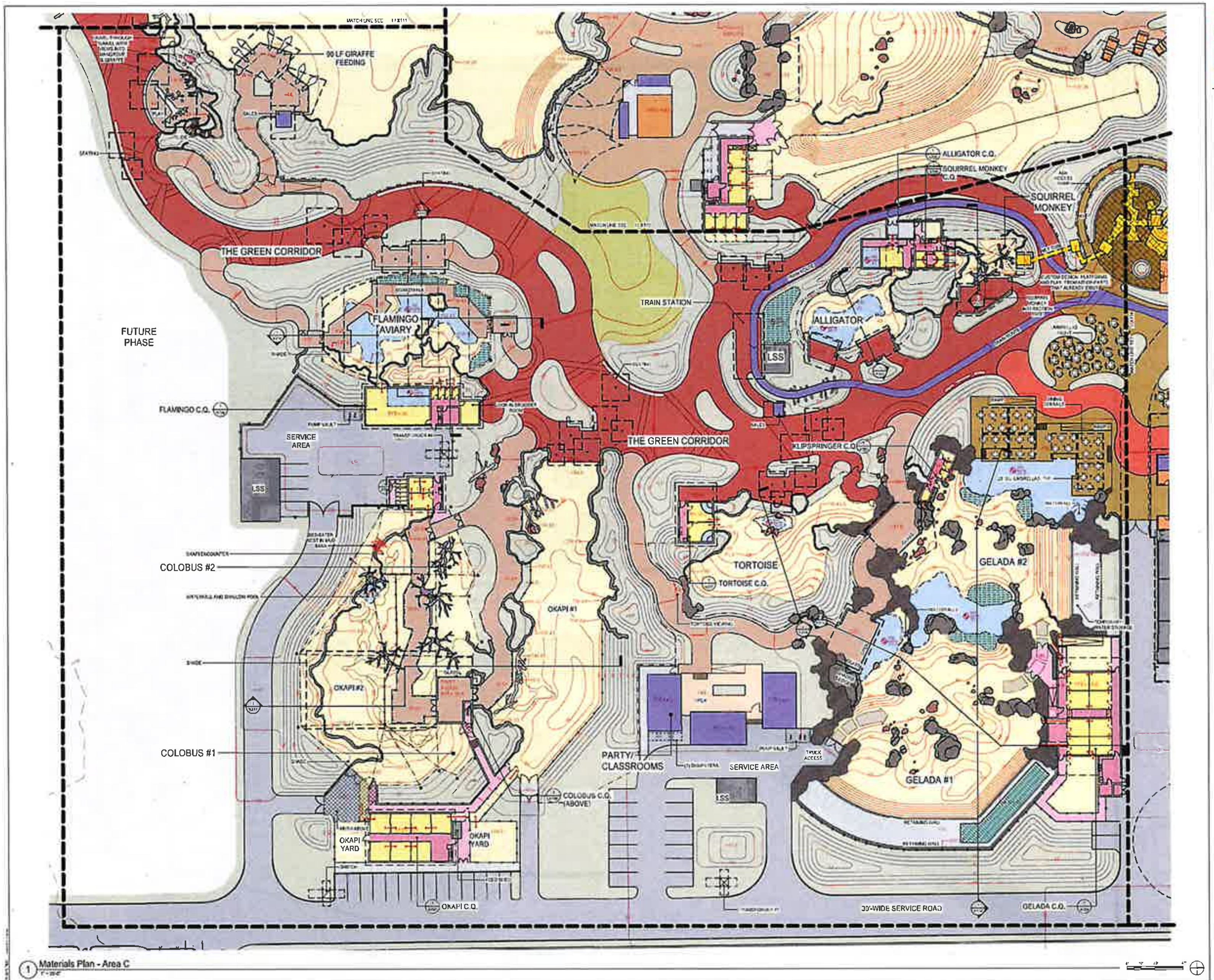
The New Zoo at Elk Grove

MATERIALS PLAN - AREA B

SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2021
SCALE	1" = 30'-0"
CHECKED	SHR/BK
SHEET	X112

Schematic Plans



1 Materials Plan - Area C

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The New Zoo at Elk Grove

MATERIALS PLAN - AREA C

SHEET SIZE: ARCH E (36" x 48")

DATE: 06 October 2022

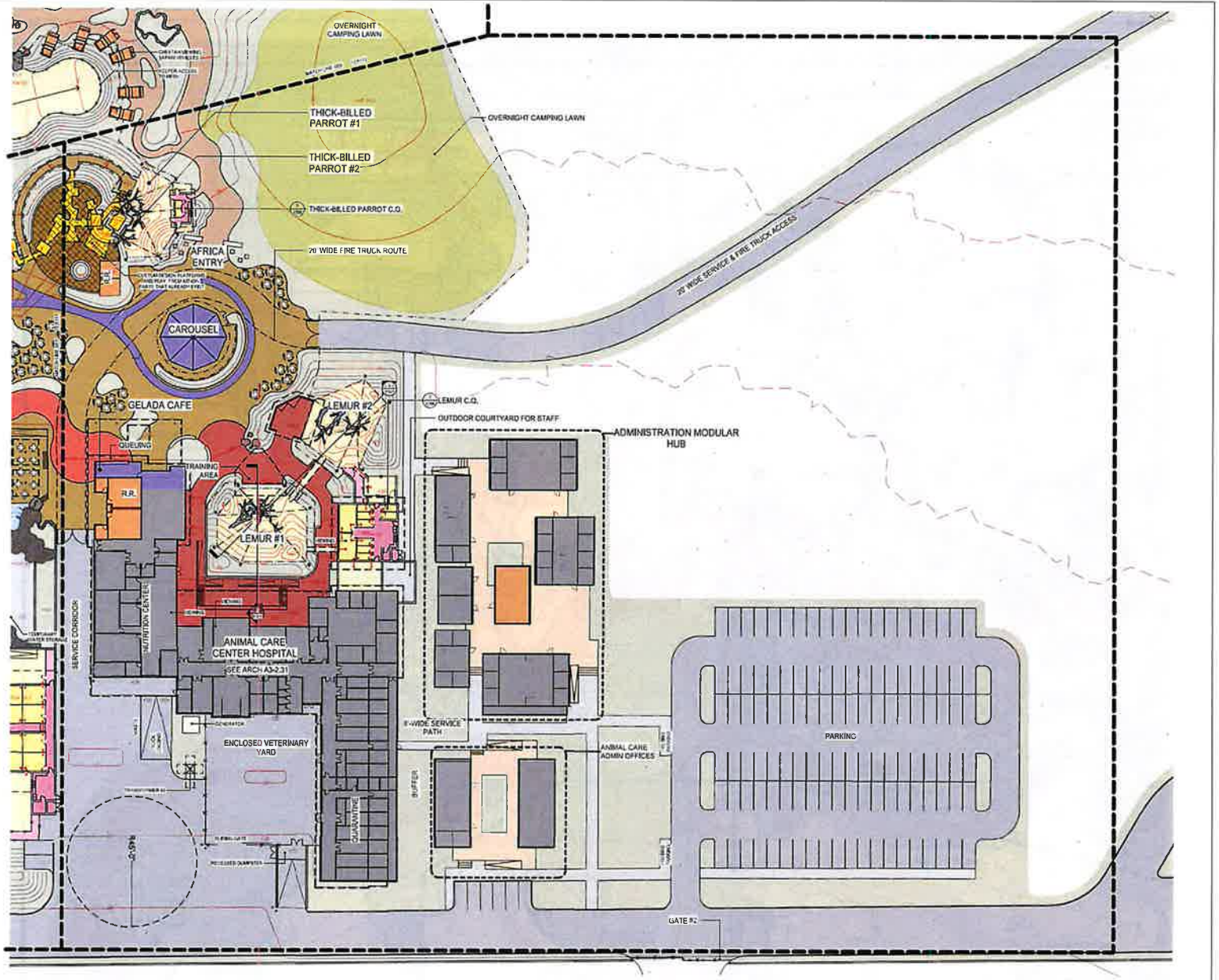
SCALE: 1" = 20'-0"

CHECKED

SHEET

X113

Schematic Plans



1 Materials Plan - Area D

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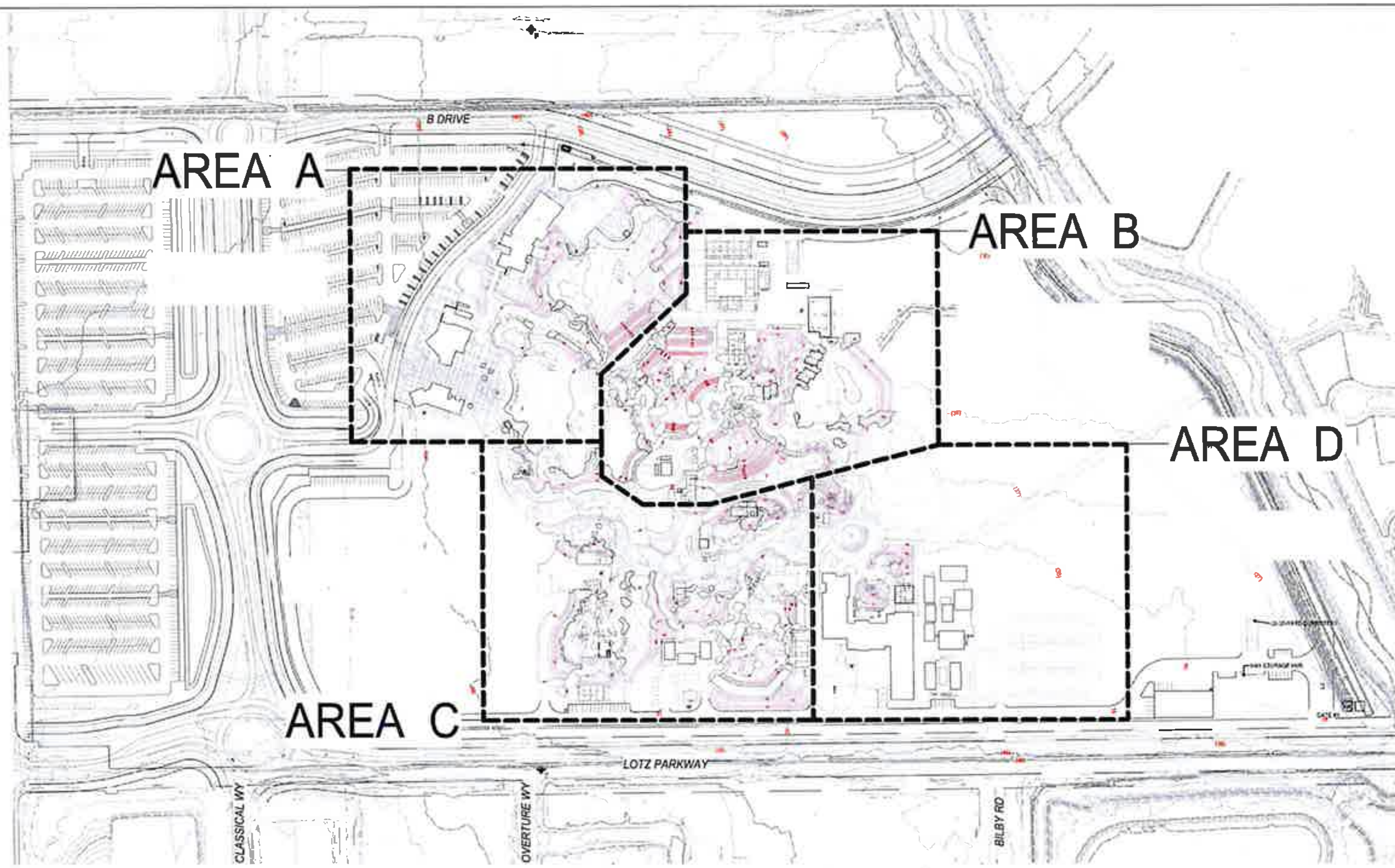
REV	DATE	DESCRIPTION
1	06.01.2023	For Review
2	10.06.2023	For Pricing

The New Zoo at Elk Grove

MATERIALS PLAN - AREA D

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1" = 20'-0"
CHECKED	SAMBA
SHEET	X114

Schematic Plans



1 Phase 1a and 1b Overall Grading Key Plan

Grading Plan Legend

- LIMIT OF WORK
- MATCHLINE
- PROPOSED CONTOUR LINE
- EXISTING CONTOUR LINE
- SPOT ELEVATION
- TOP OF WALL
- FINISHED FLOOR ELEVATION
- WATER LEVEL

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The New Zoo at Elk Grove

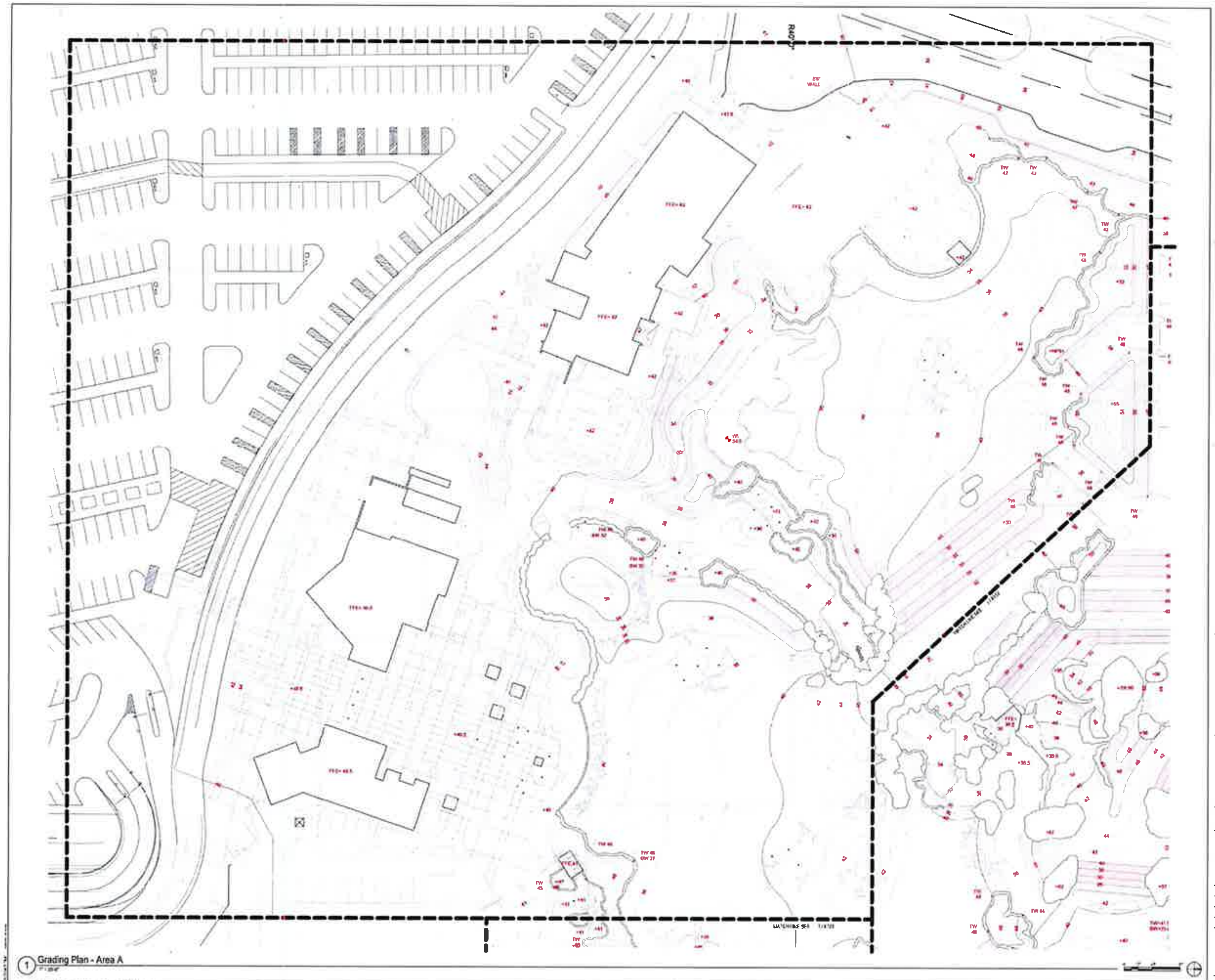
PHASE 1a AND 1b OVERALL GRADING PLAN AND LEGEND

SHEET SIZE: ARCH E (36" / 48")

SHEET

X120

Schematic Plans



1 Grading Plan - Area A

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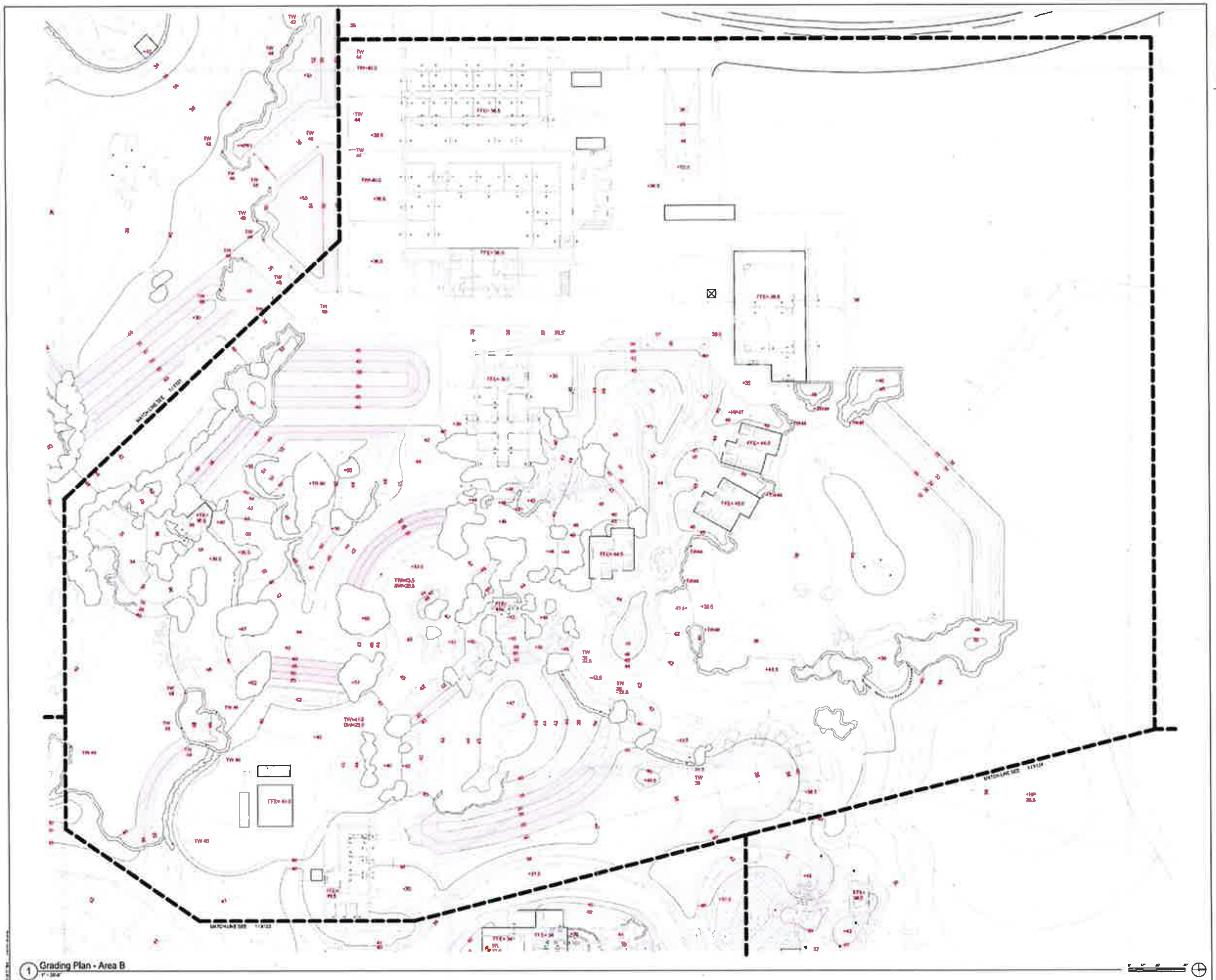
The New Zoo at Elk Grove

GRADING PLAN - AREA A

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1" = 20'-0"
CHECKED	SAMBA
SHEET	X121

Schematic Plans



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The New Zoo at Elk Grove

GRADING PLAN - AREA B

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 20'-0"
CHECKED:	
SHEET:	

X122

Schematic Plans

1 Grading Plan - Area C

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exp.

REV	DATE	DESCRIPTION
1	04/27/2023	For Review
2	07/05/2023	For Pricing

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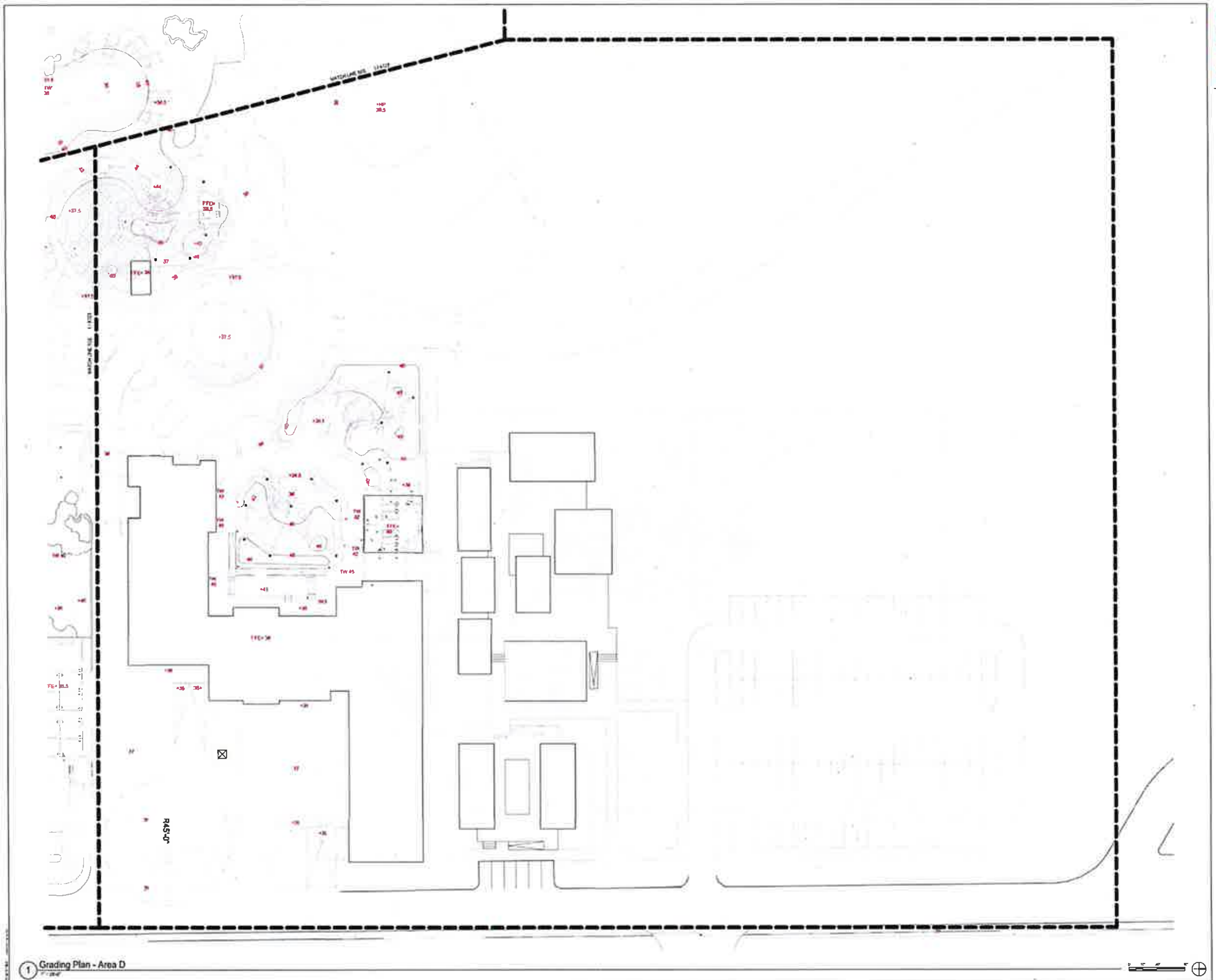
The New Zoo at Elk Grove

GRADING PLAN - AREA C

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 20'-0"
CHECKED:	SM/KM
SHEET:	X123

Schematic Plans



1 Grading Plan - Area D

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

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TJP ENGINEERING

exp.

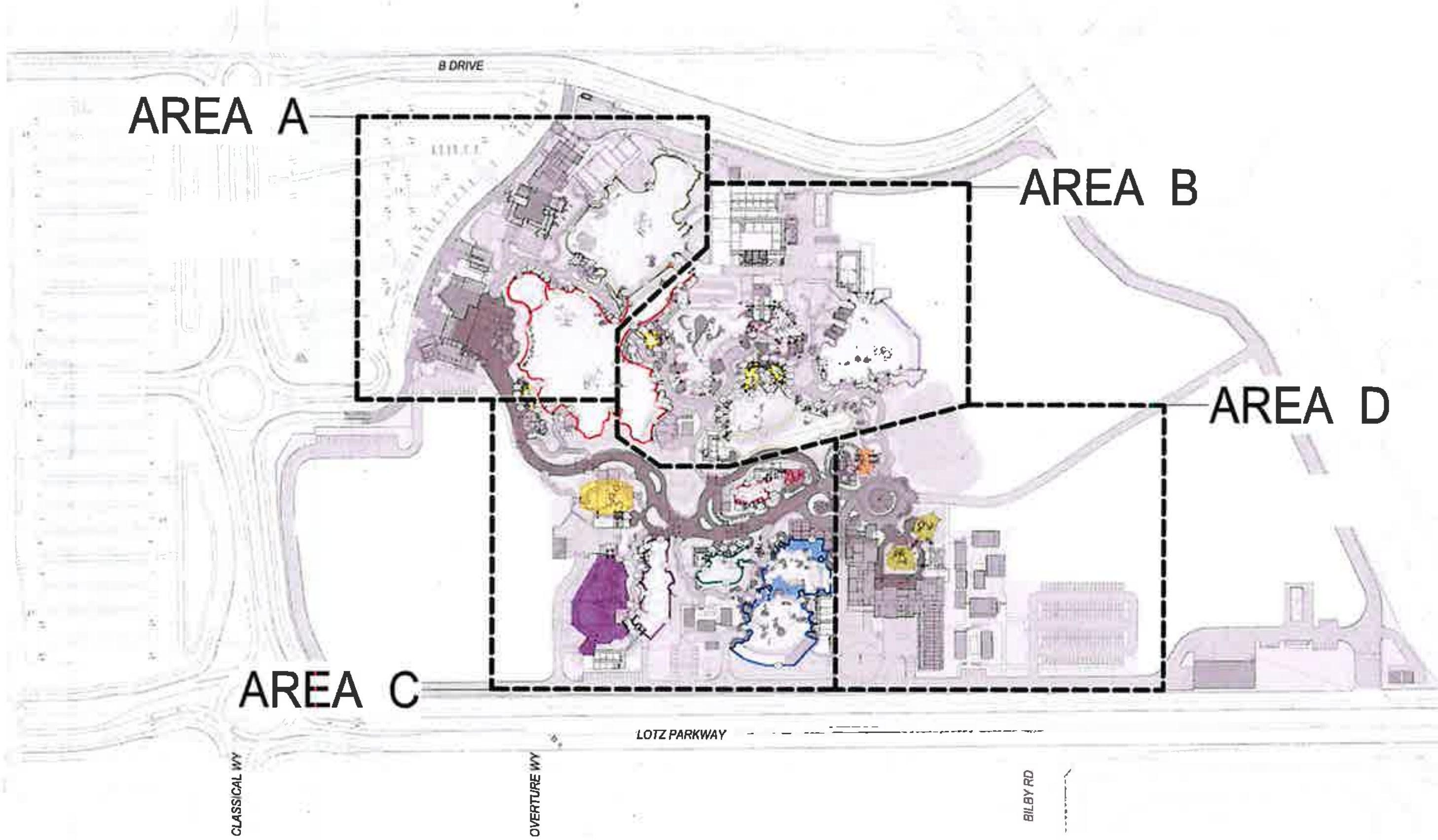
The New Zoo at Elk Grove

GRADING PLAN - AREA D

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 20'-0"
CHECKED:	SH/KL/c
SHEET	

X124

Schematic Plans



1 Phase 1a and 1b Overall Barriers Key Plan

Barriers Plan Legend

SAC ZOO

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NOLL & TAM ARCHITECTS

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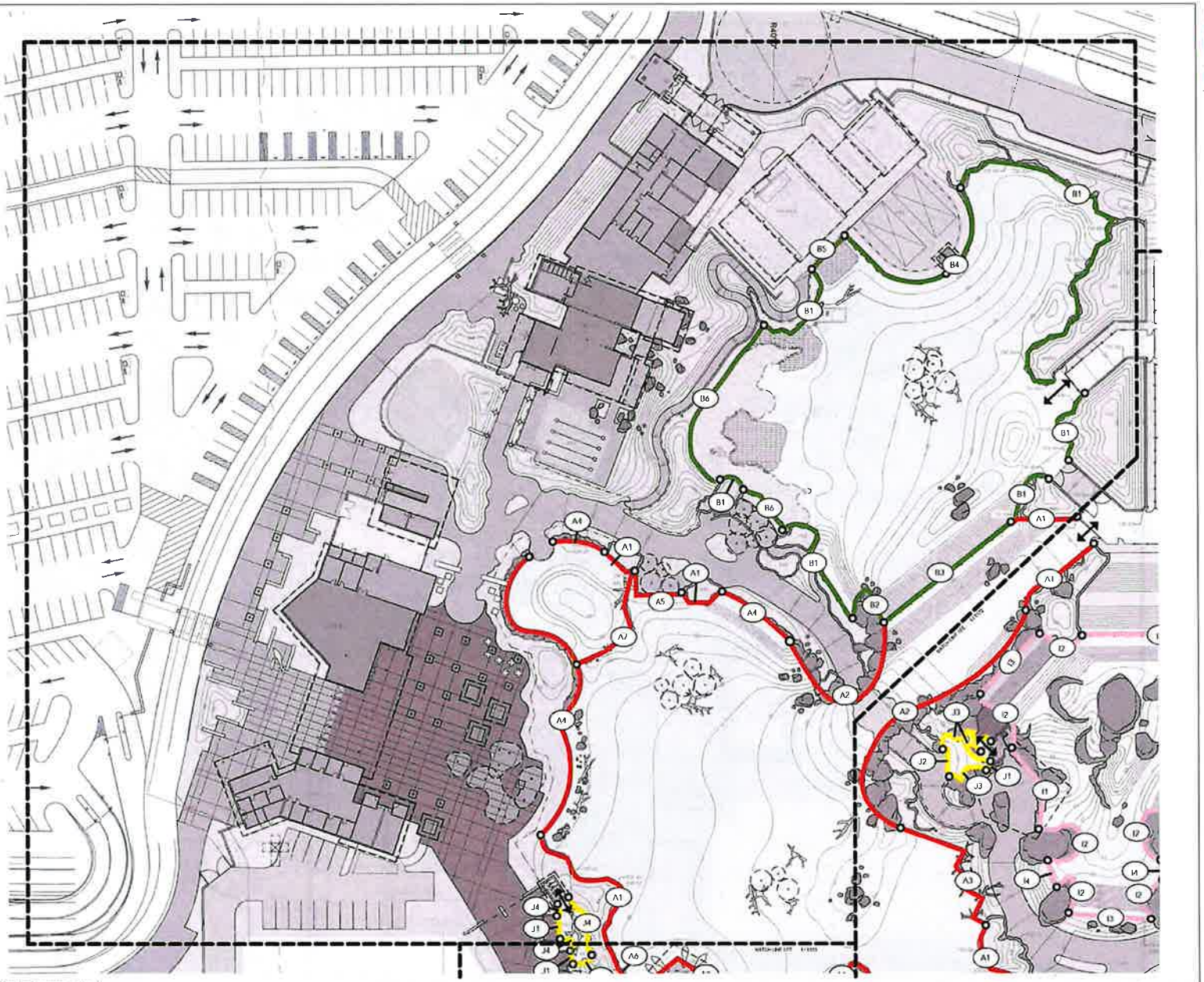
The New Zoo at Elk Grove

OVERALL BARRIERS PLAN AND LEGEND

SHEET SIZE: ARCH E (36" x 48")
DATE: 06 October 2023
SCALE: As indicated
CHECKED:
SHEET:

X130

Schematic Plans



1 Barriers Diagram - Area A

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NOLL & TAM ARCHITECTS

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The New Zoo at Elk Grove

BARRIERS DIAGRAM - AREA A

SHEET SIZE	ARCH E (36" x 48")
DATE	26 October 2021
SCALE	1" = 20'-0"
CHECKED	SMYtak
SHEET	X131

Schematic Plans

1 Barriers Diagram - Area B

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NOLL & TAM ARCHITECTS

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REV.	DATE	DESCRIPTION
1	06/09/2023	For Permit
2	10/06/2023	For Pricing

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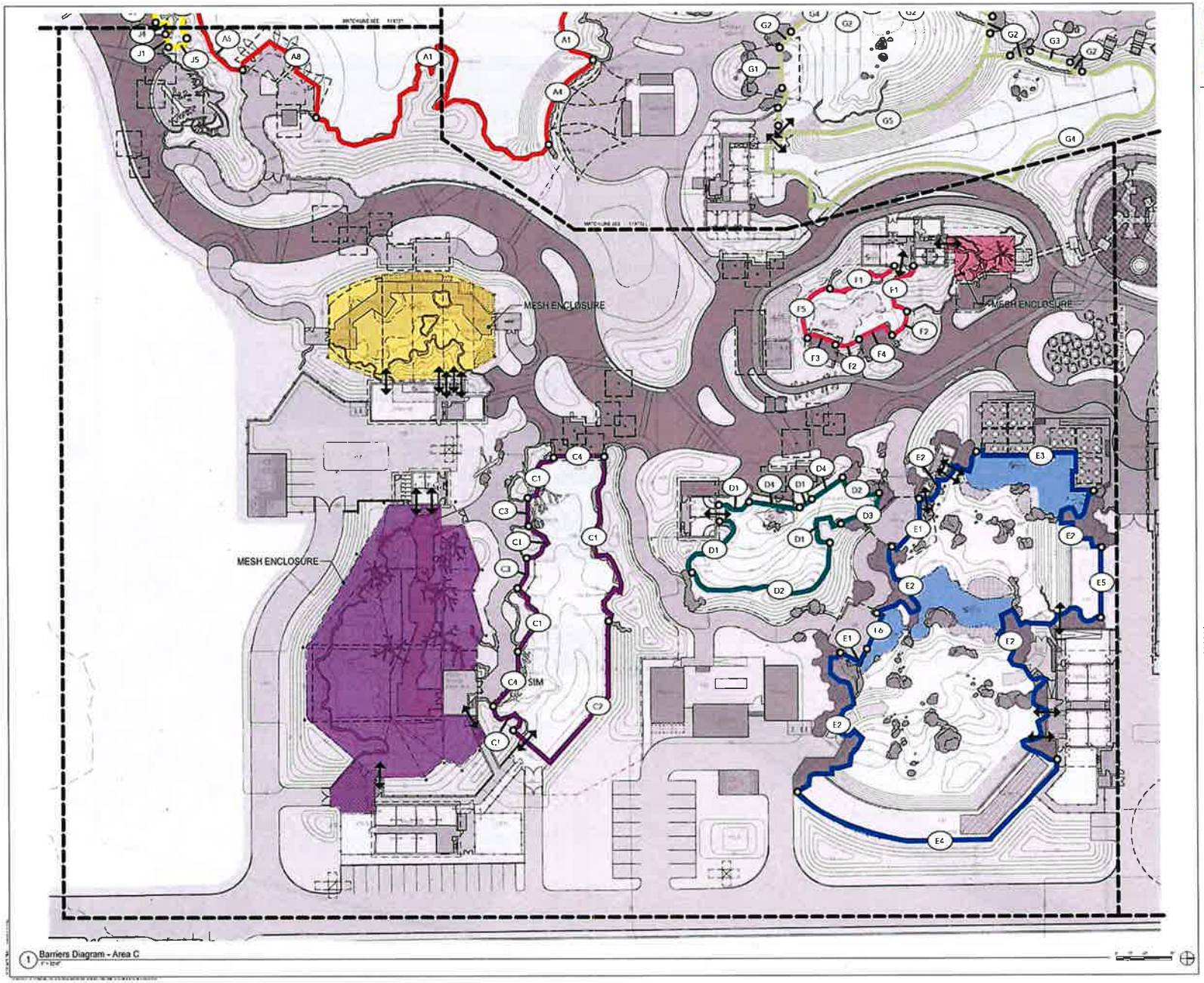
BARRIERS DIAGRAM - AREA B

SHEET SIZE	ARCH E1 (30" x 42")
DATE	26 October 2023
SCALE	1" = 20'-0"
CHECKED	SM/MM

SHEET

X132

Schematic Plans



1 Barriers Diagram - Area C

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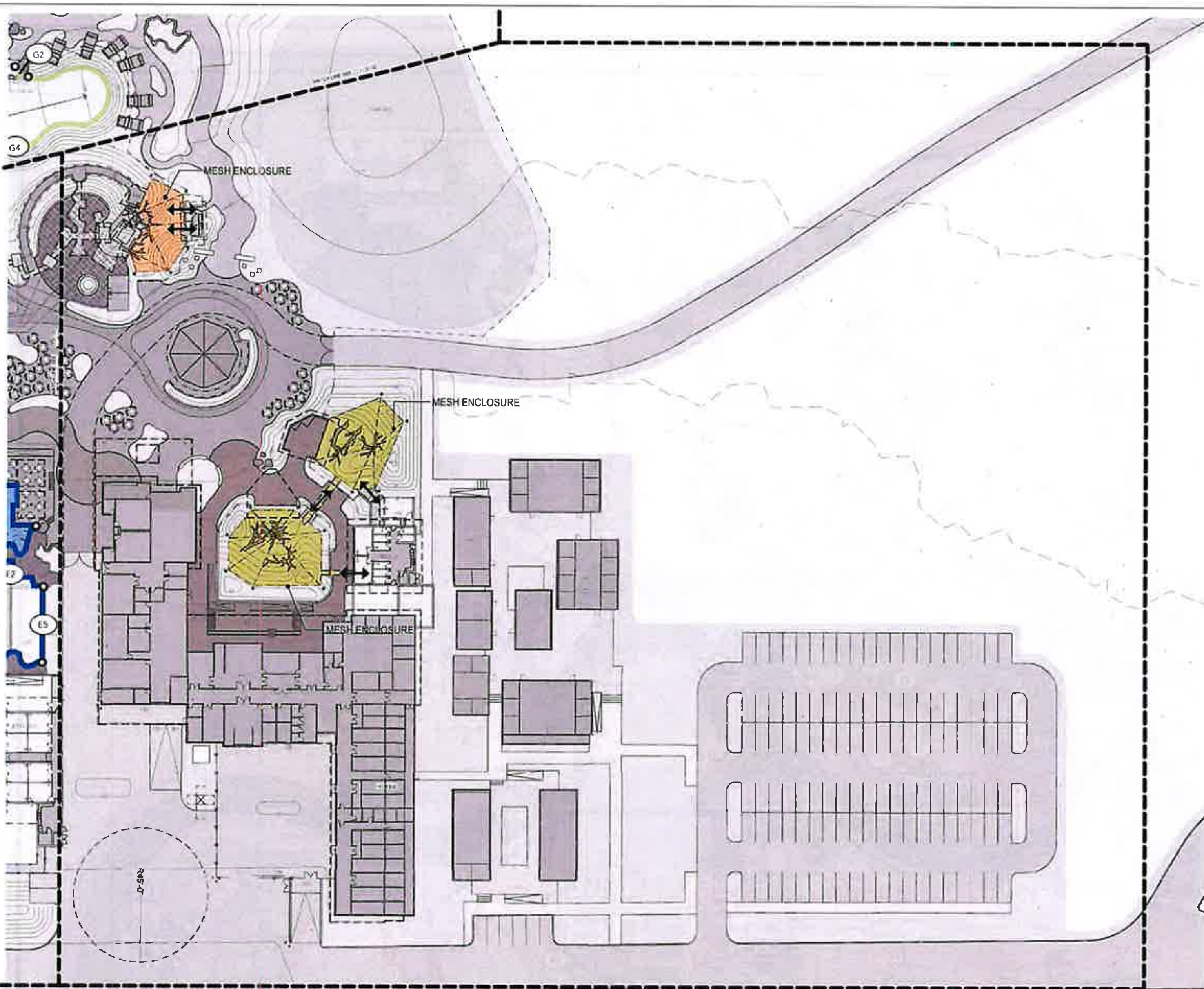
BARRIERS DIAGRAM - AREA C

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1" = 20'-0"
CHECKED	SM/RM
SHEET	X133

Schematic Plans



1 Barriers Diagram - Area D

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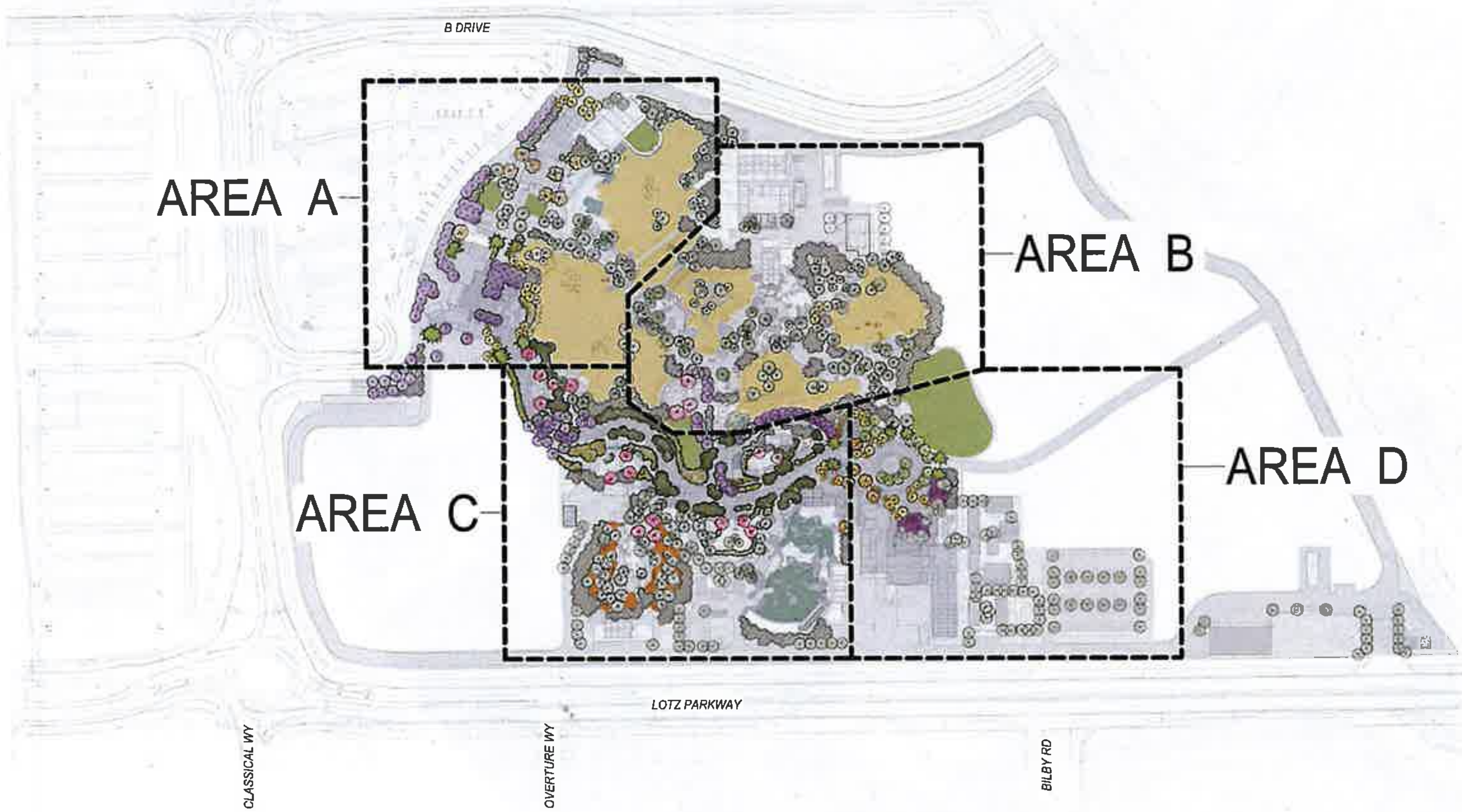
The New Zoo at Elk Grove

BARRIERS DIAGRAM - AREA D

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2022
SCALE	1" = 20'-0"
CHECKED	SANDAL
SHEET	

X134

Schematic Plans



(1) Phase 1a and 1b Overall Landscape Irrigation Plan

Landscape Strategy Plan Legend

Entry Plaza:
- Shade Tree
- Flowering Accent Trees
- Screen Trees/Shrubs in Mass
- Grasses and Seasonal Perennials
- Lawn

City Walk:
- Shade Tree
- Screen Trees/Shrubs in Mass
- Palm Grove

Africa:
- Dryland Savanna Trees
- Specimen Tree
- Screen Trees/Shrubs in Mass
- Lawn
- Working Wetlands
- Savanna Grasses

The Green Corridor:
- Palm Grove
- Shade Tree
- Specimen Tree
- Native Sycamore Grove
- Screen Trees/Shrubs in Mass
- Dryland Accent Trees
- Grasses and Seasonal Perennials
- Working Wetlands

The Play Zone:
- Palm Grove
- Shade Tree
- Specimen Tree
- Flowering Accent Trees

Gelada Zone:
- Tall Highlands Grasses

Okapi Zone:
- Forest Understory Plantings

Lemur Zone:
- Dense Forest Understory Plantings
- Dense Tropical Simulator Trees

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PHASE 1a AND 1b OVERALL LANDSCAPE STRATEGY PLAN

SHEET SIZE ARCH E (36" x 48")

X140

Schematic Plans

1 Landscape and Irrigation Plan - Area A

SAC 200

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NUM	DATE	DESCRIPTION
1	04/28/2023	For Review
2	10/06/2023	For Permit

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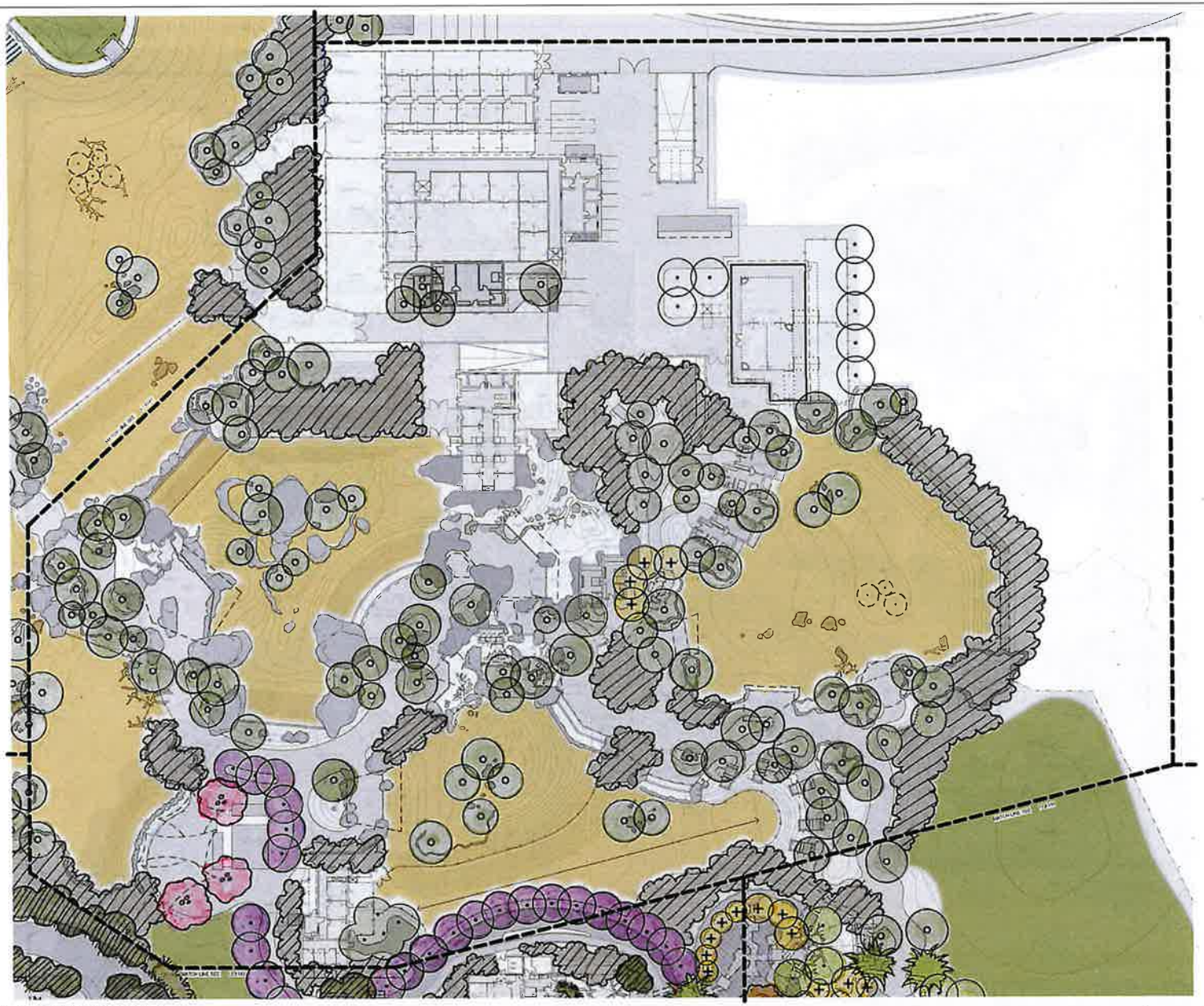
The New Zoo at Elk Grove

LANDSCAPE STRATEGY - AREA A

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 20'-0"
CHECKED:	SHR/dc
SHEET	X141

Schematic Plans



1 Landscape and Irrigation Plan - Area B

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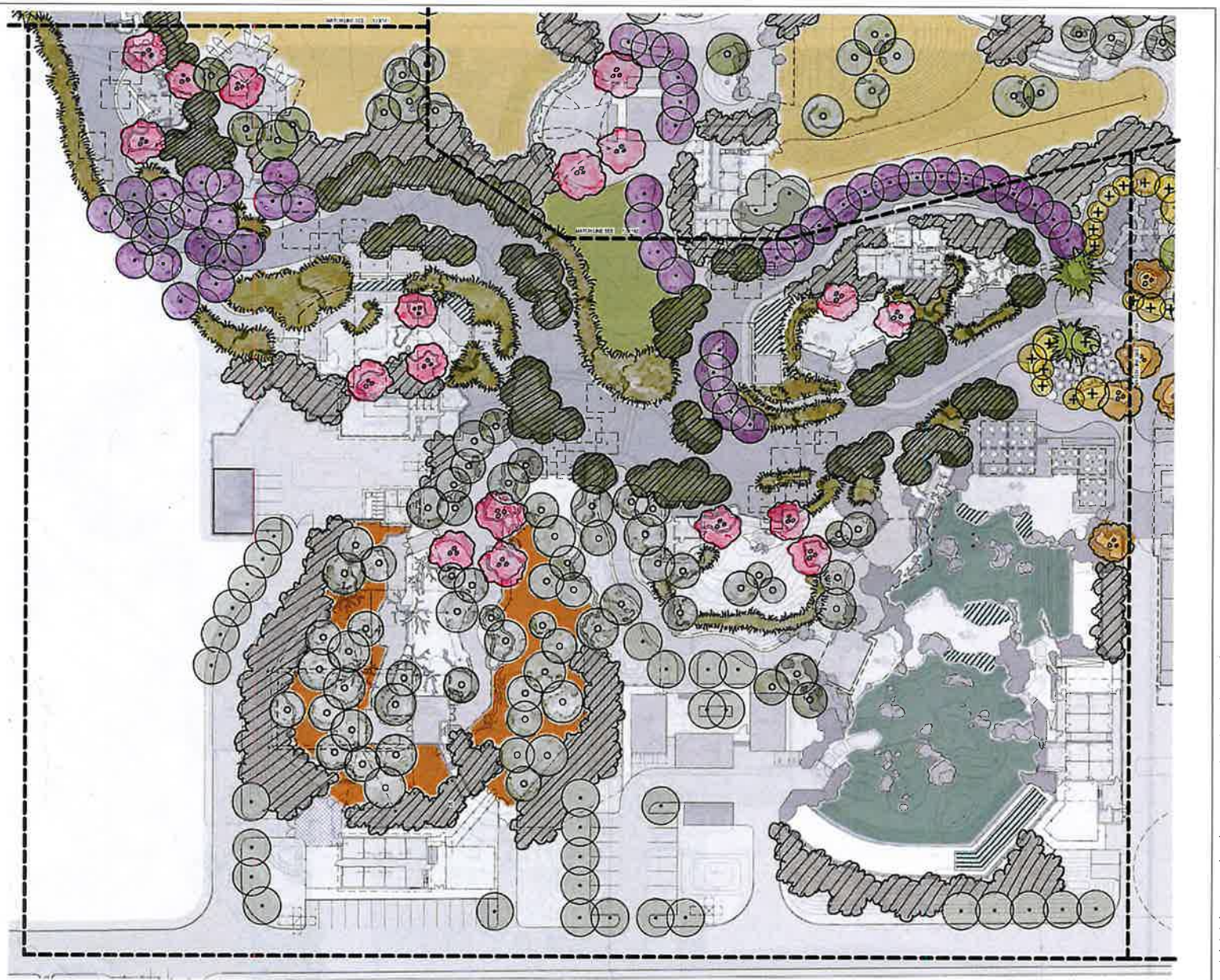
The New Zoo at ER Grove

LANDSCAPE STRATEGY - AREA B

SHEET SIZE	ARCH B (18" x 24")
DATE	26 October 2023
SCALE	1" = 40'-0"
CHECKED	SM/MK
SHEET	X142

Schematic Plans



1 Landscape and Irrigation Plan - Area C

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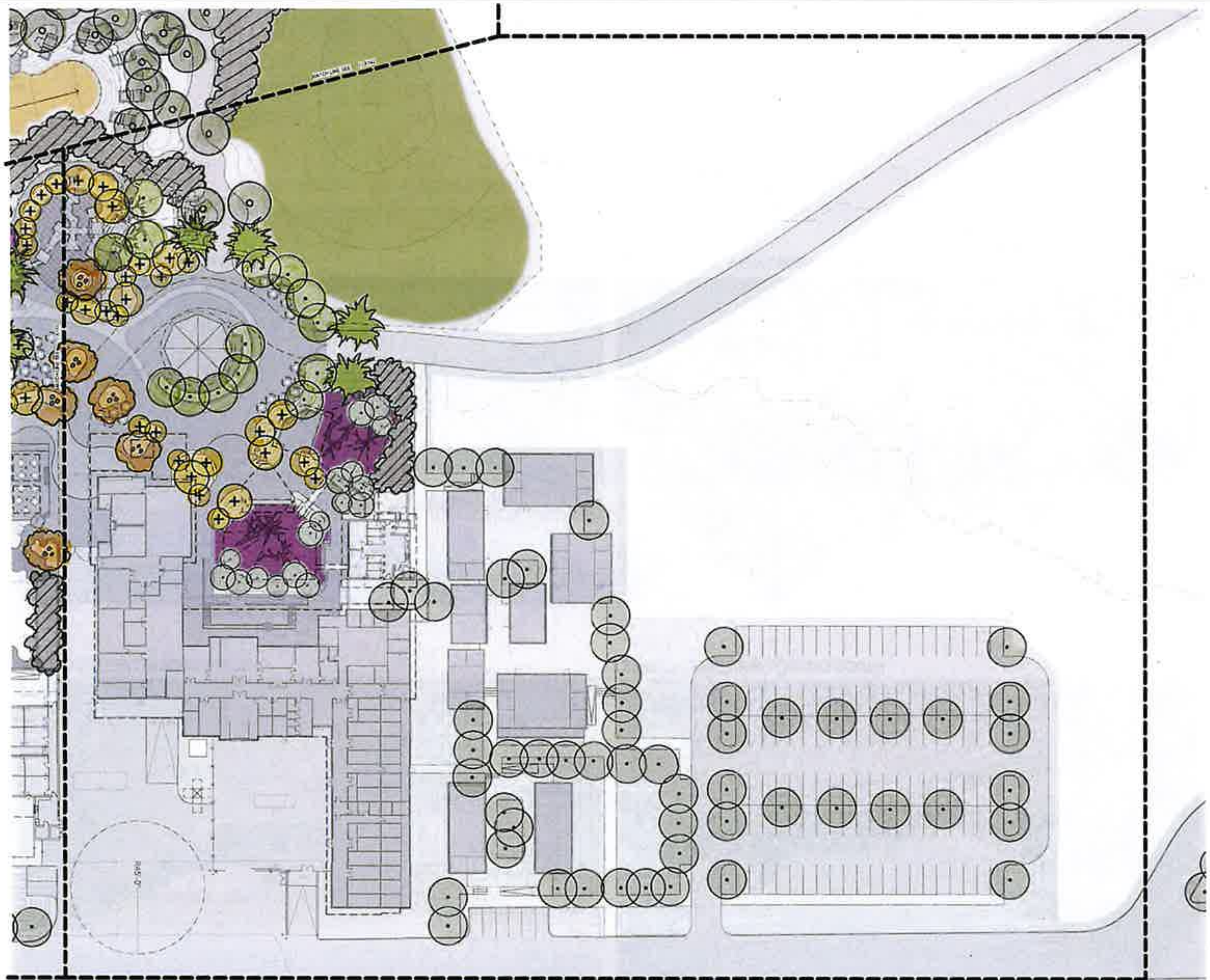
LANDSCAPE STRATEGY - AREA C

SHEET SIZE: ARCH D (36" x 24")
DATE: 06 October 2022
SCALE: 1" = 20'-0"
CHECKED: SHR/NK
SHEET

X143

Schematic Plans



1 Landscape and Irrigation Plan - Area D

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The New Zoo at Elk Grove

LANDSCAPE STRATEGY - AREA D

SHEET SIZE: ARCH E (36" x 48")

DATE: 06 October 2023

SCALE: 1" = 20'-0"

SHEET

X144

Schematic Plans

BIRDSEYE VIEW LOOKING SOUTH

STREET-LEVEL VIEW LOOKING SOUTH

BIRDSEYE VIEW LOOKING NORTH

STREET-LEVEL VIEW LOOKING NORTH

SAC ZOO

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REV	DATE	DESCRIPTION
1	08/17/2022	For Review
2	10/06/2023	For Pricing

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The New Zoo at Elk Grove

VIEWS FROM LOTZ PARKWAY - PHASE I

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1" = 1'-0"
CHECKED	SM/MK

SHEET

X300

Schematic Plans

BIRDSEYE VIEW LOOKING SOUTH

STREET-LEVEL VIEW LOOKING SOUTH

BIRDSEYE VIEW LOOKING NORTH

STREET-LEVEL VIEW LOOKING NORTH

SAC ZOO

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The New Zoo at Elk Grove

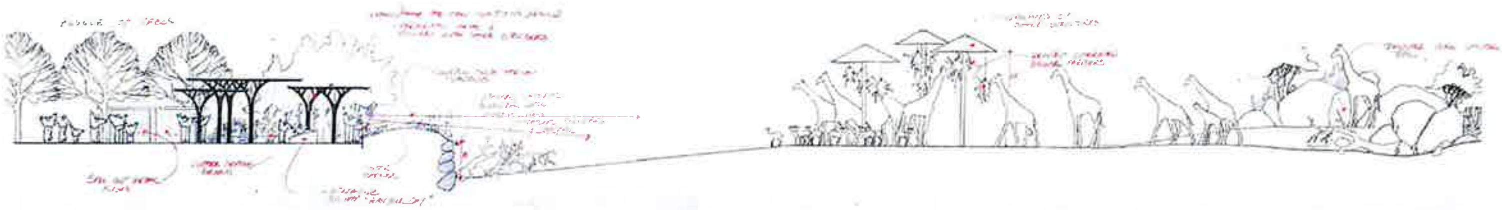
VIEWS FROM LOTZ PARKWAY - FULL BUILD-OUT

SHEET SIZE	ARCH D (36" x 48")
DATE	26 October 2023
SCALE	1" = 1'-0"
CHECKED	SM/MJK

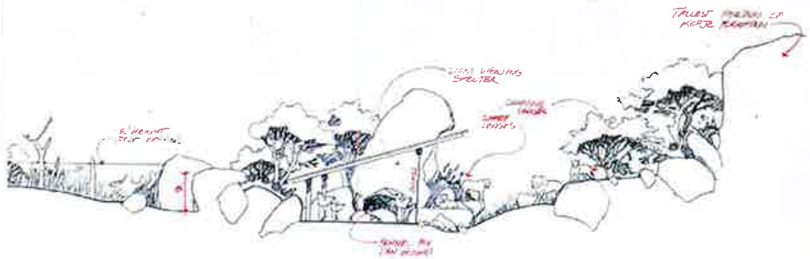
SHEET

X301

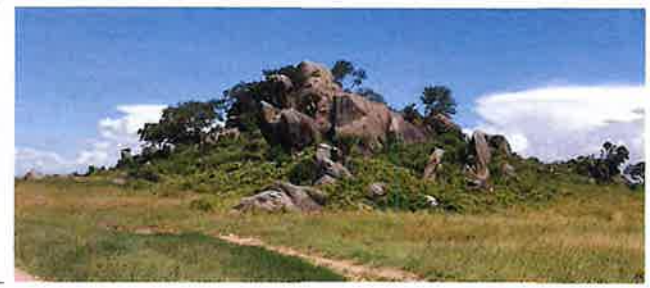
Schematic Plans



(1) Entry to Lion - Section



Entry to Lion Continued- Section



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The New Zoo at Elk Grove

SECTIONS - ENTRY TO LION

SHEET SIZE:

DATE:

SCALE:

CHECKED:

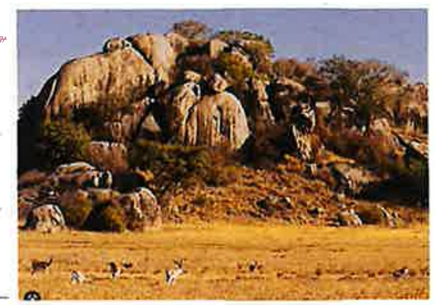
SHEET

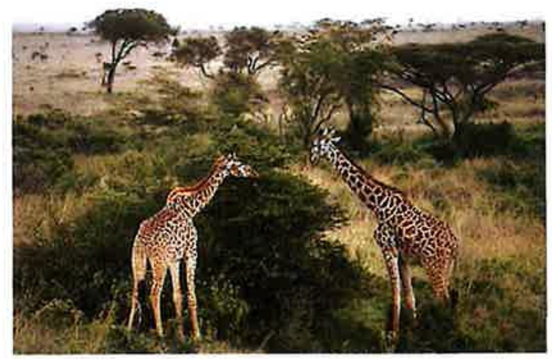
X310

Schematic Plans

① Giraffe Lodge to Lion - Section

Giraffe Lodge to Lion Continued - Section





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The New Zoo at Elk Grove

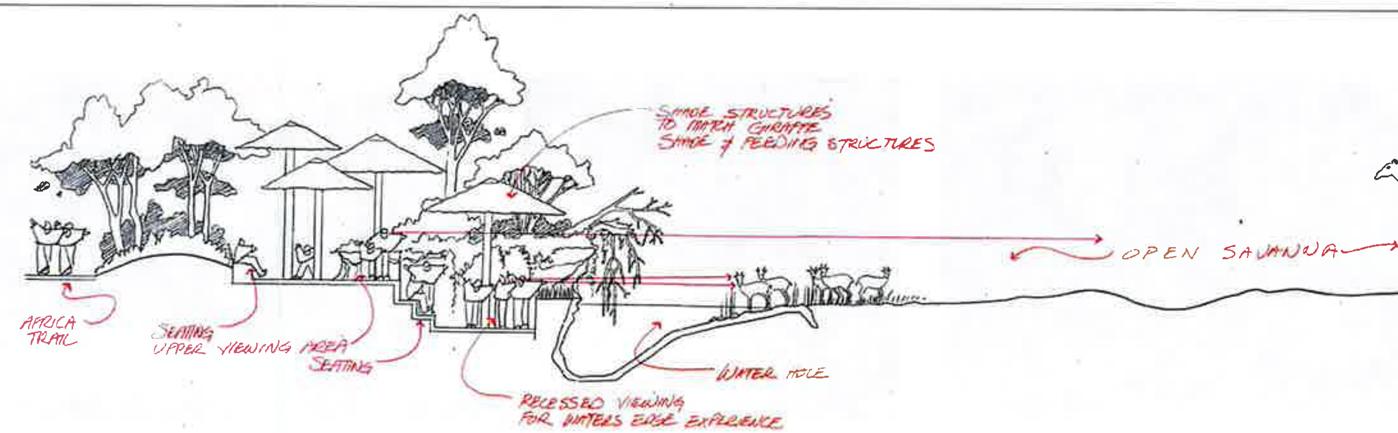
SECTIONS - GIRAFFE LODGE TO LION

SHEET SIZE: ARCH E (36" × 48")

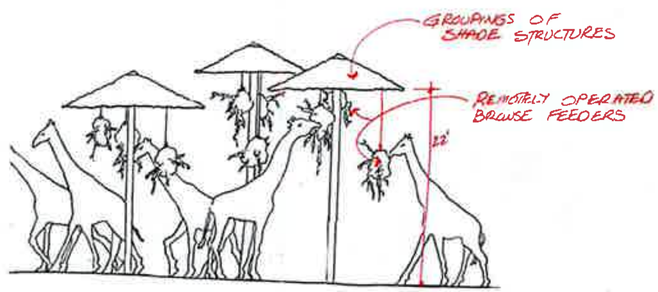
SHEET

X311

Schematic Plans



(1) Savanna West View - Section



Savanna West View - Section Continued

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The New Zoo at Elk Grove

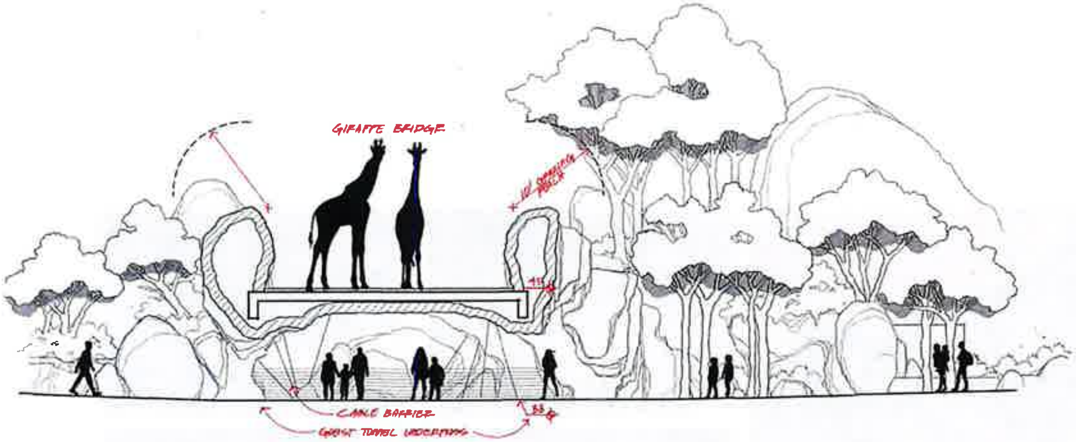
SECTIONS - SAVANNA WEST VIEW

SHEET SIZE: ARCH E (36" x 48")

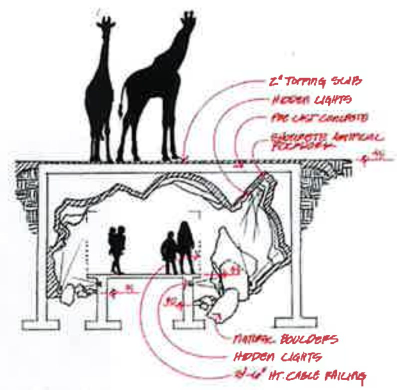
SHEET

X312

Schematic Plans



1 Savanna Animal Bridge North South - Section



2 Savanna Tunnel - Section

SAC ZOO

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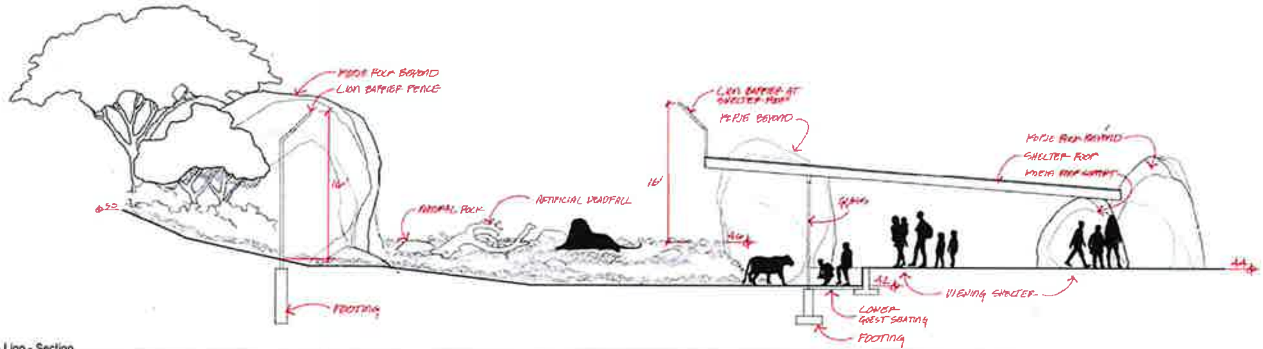
The New Zoo at Elk Grove

SECTIONS - SAVANNA TUNNEL

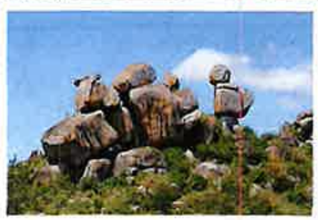
SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2023
SCALE	As indicated
CHECKED	BARGE
SHEET	

X313

Schematic Plans



1 Lion - Section



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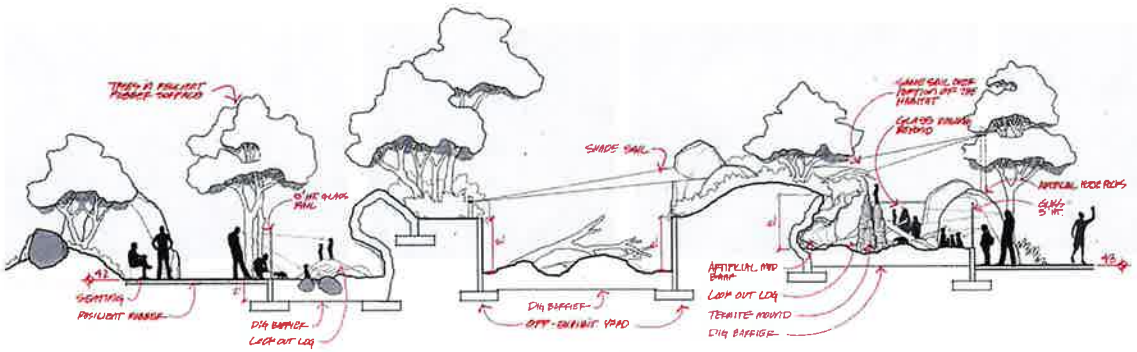
SECTIONS -LION

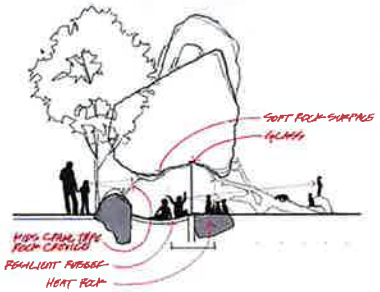
SHEET SIZE	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE	As indicated
CHECKED	SAVVIE
SHEET	

X314

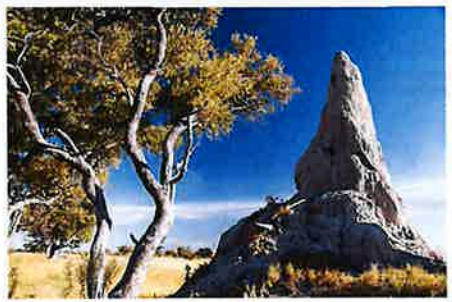
Schematic Plans



1 Meerkat - Section



2 Meerkat Crawl-Through - Section



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REV	DATE	DESCRIPTION
1	[illegible]	For Review
2	[illegible]	For Pricing

NOT FOR CONSTRUCTION

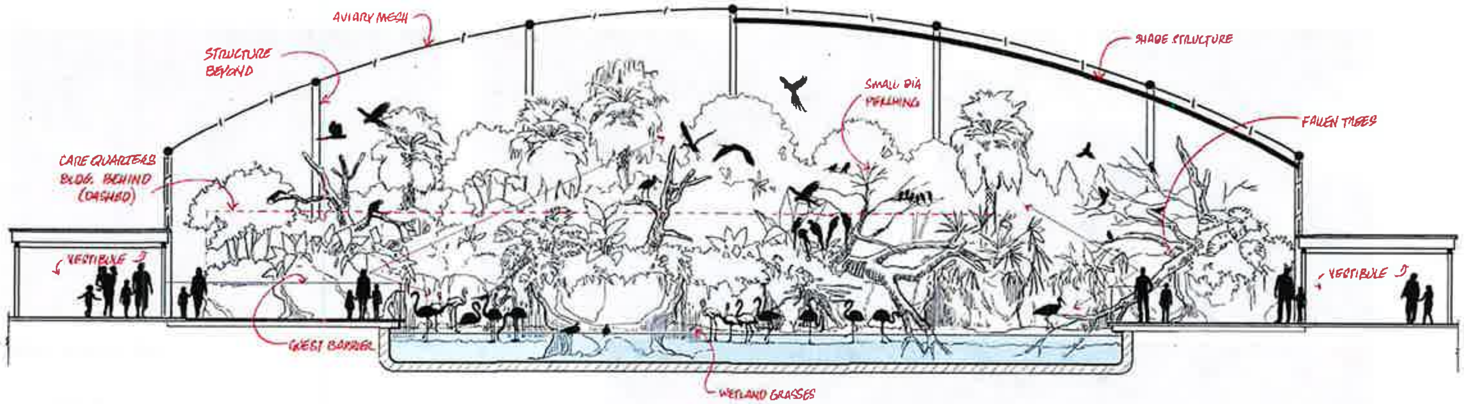
The New Zoo at Elk Grove

SECTIONS - MEERKAT

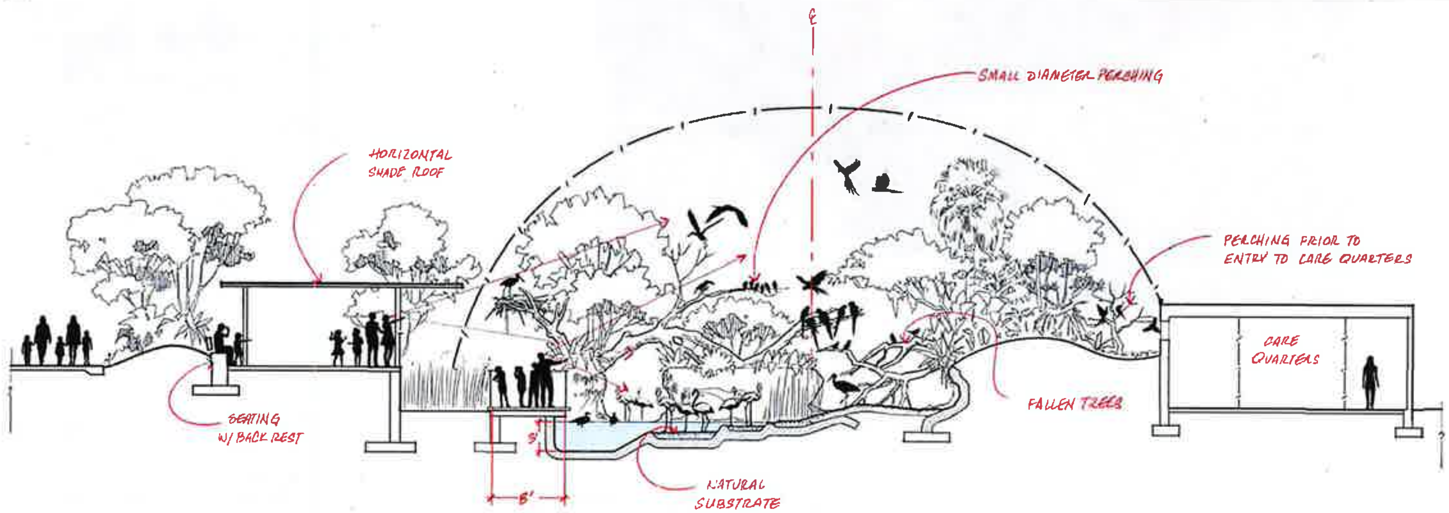
SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	As indicated
CHECKED	SHR/dk
SHEET	

X315

Schematic Plans



1 Flamingo North South - Section



2 Flamingo East West - Section

SAC ZOO

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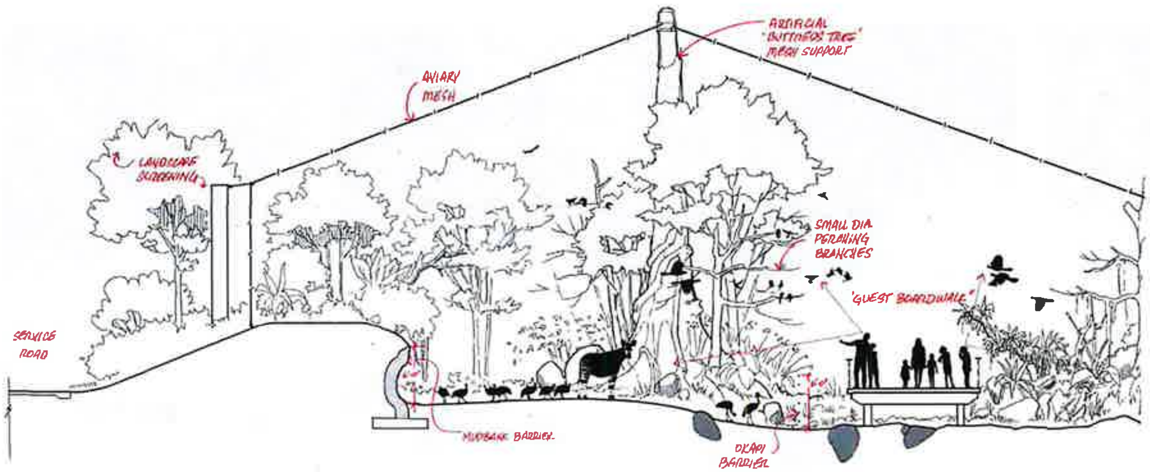
The New Zoo at Elk Grove

SECTIONS - FLAMINGO

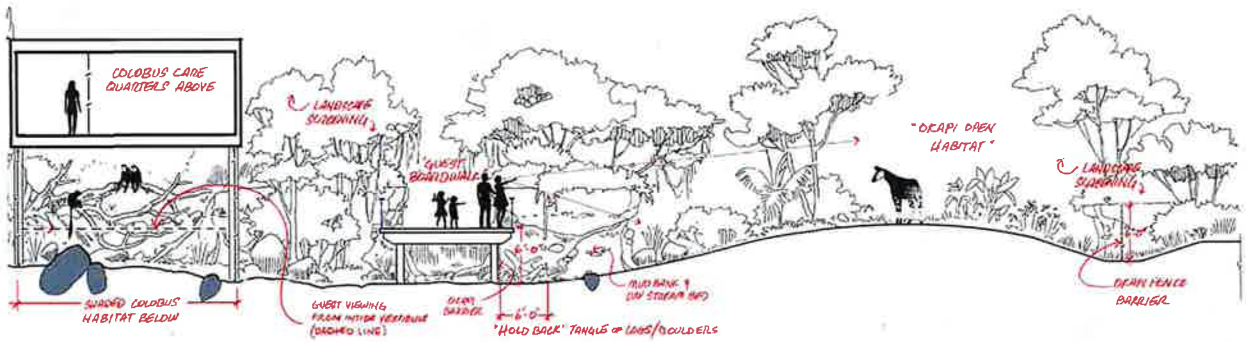
SHEET SIZE	ARCH E (36" x 48")
DATE:	28 October 2023
SCALE	As indicated
CHECKED	SHR/NK
SHEET	

X316

Schematic Plans



① Okapi North South - Section



Okapi North South Continued- Section

SAC ZOO

shr studios
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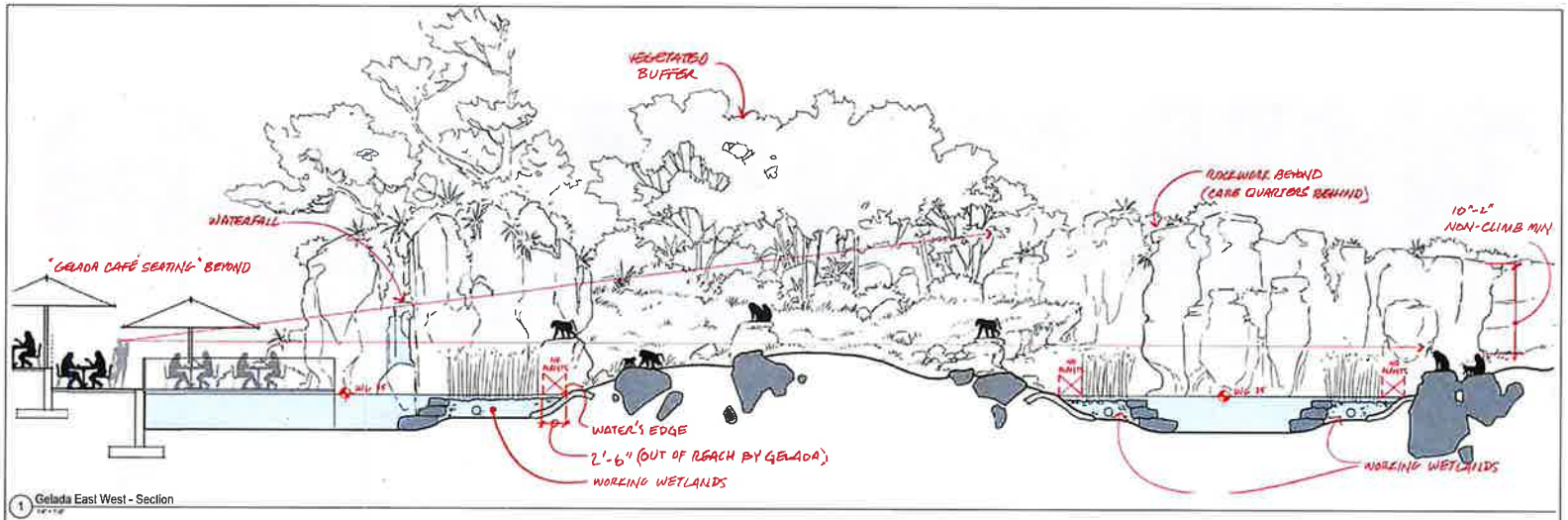
The New Zoo at Elk Grove

SECTIONS - OKAPI, COLOBUS

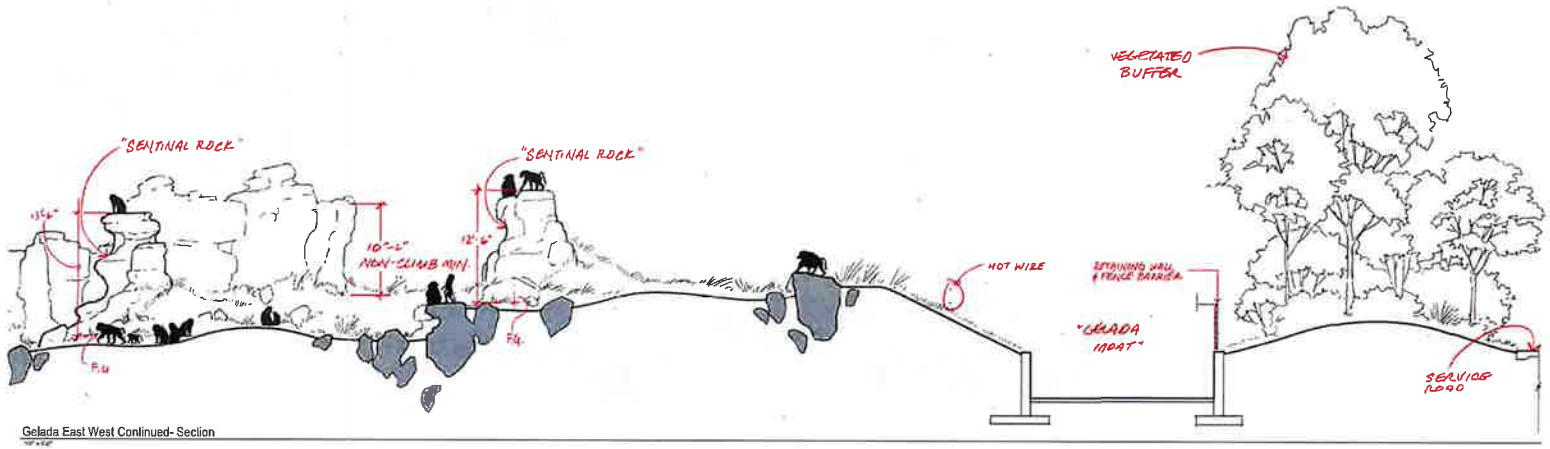
SHEET SIZE: ARCH E (36" x 48")
DATE: 06 October 2023
SCALE: As indicated
CHECKED:
SHEET

X317

Schematic Plans



1 Gelada East West - Section



Gelada East West Continued- Section

SAC ZOO

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REV	DATE	DESCRIPTION
1	05/27/23	For Review
2	09/25/23	For Pricing

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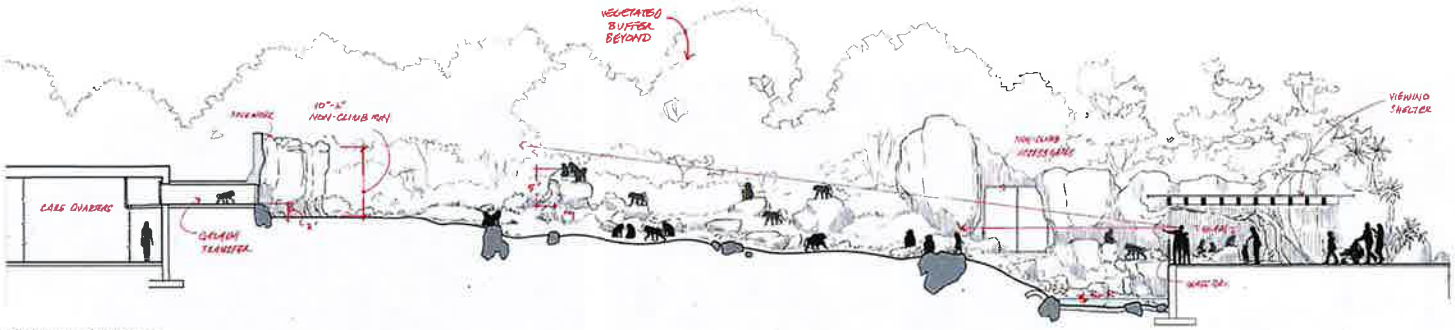
The New Zoo at Elk Grove

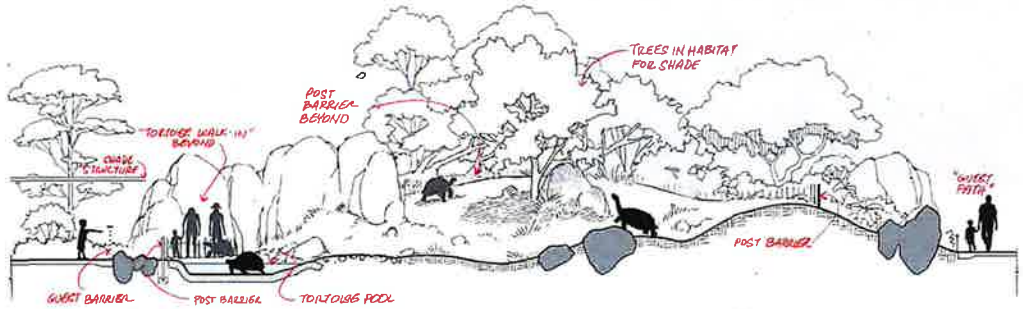
SECTIONS - GELADA

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	As indicated
CHECKED:	SAYEDA
SHEET:	X318

Schematic Plans



1 Gelada North South - Section



2 Tortoise East West - Section

SAC 200

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REV	DATE	DESCRIPTION
1	06/07/2023	For Review
2	09/06/2023	For Pricing

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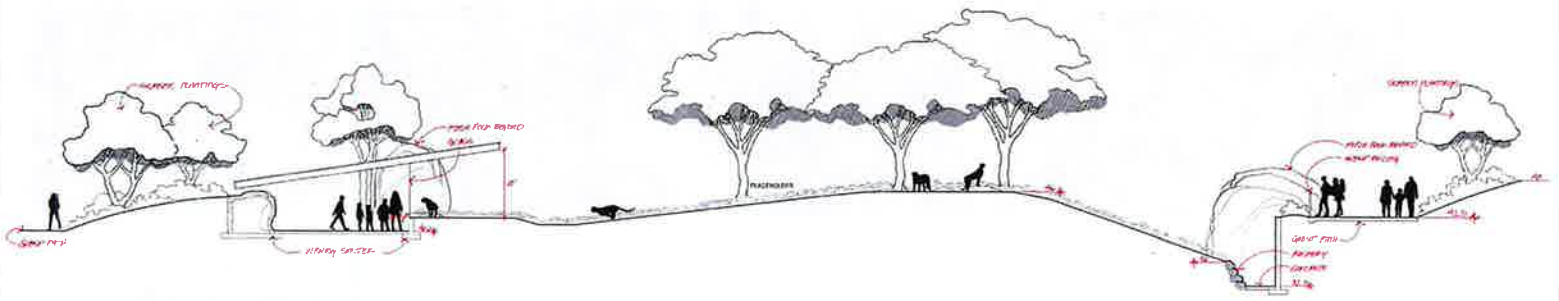
The New Zoo at Elk Grove

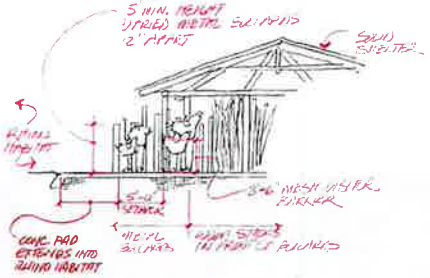
SECTIONS - GELADA AND TORTOISE

SHEET SIZE	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE	As indicated
CHECKED	SM/MA
SHEET	X319

Schematic Plans



1 Cheetah - Section



2 Rhino Boma - Section

SAC 200

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The New Zoo at Elk Grove

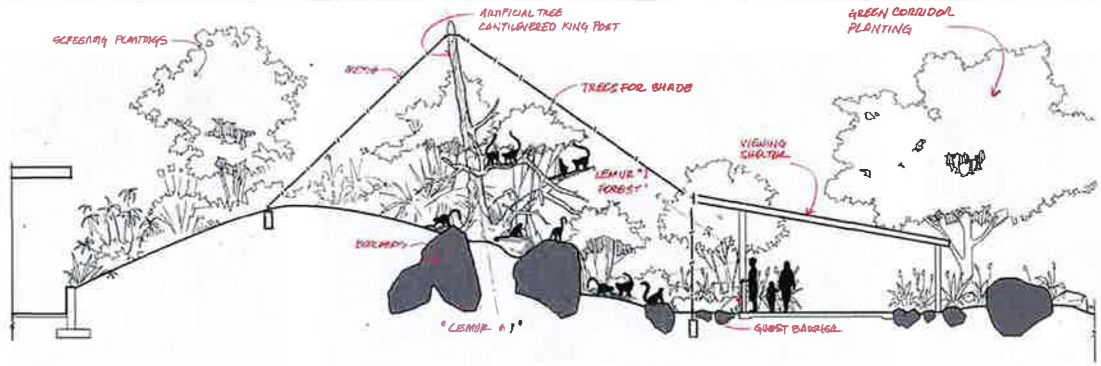
SECTIONS - CHEETAH AND RHINO

SHEET SIZE	ARCH E (36" x 48")
DATE:	26 October 2023
SCALE:	As indicated
CHECKED	Initials

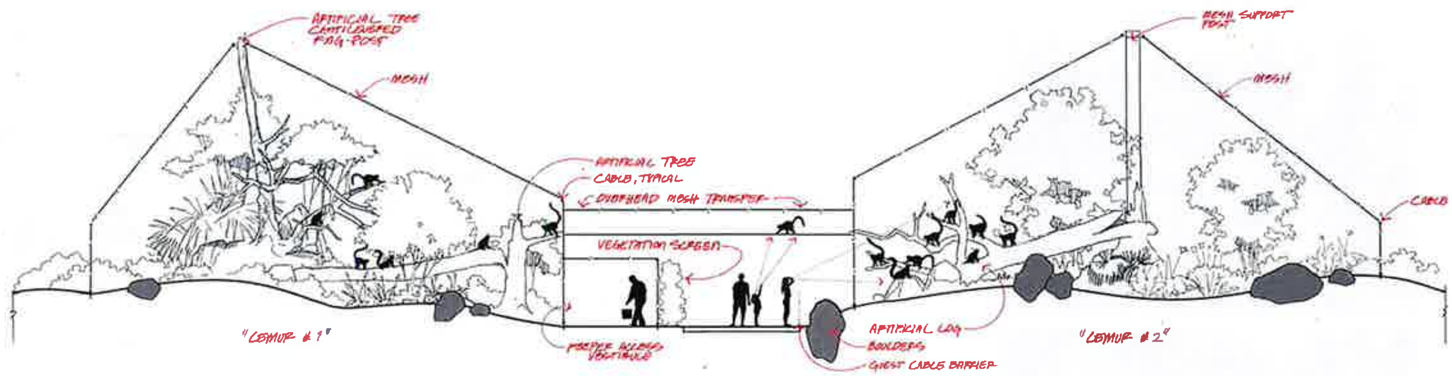
SHEET

X320

Schematic Plans



1 Lemur East West - Section



2 Lemur North South - Section

SAC ZOO

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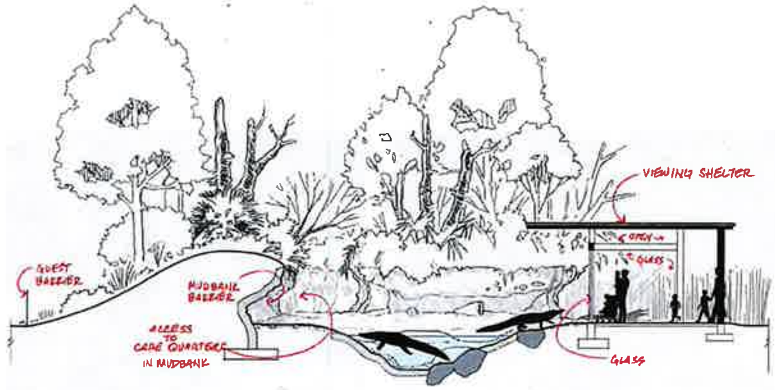
The New Zoo at Elk Grove

SECTIONS - LEMUR

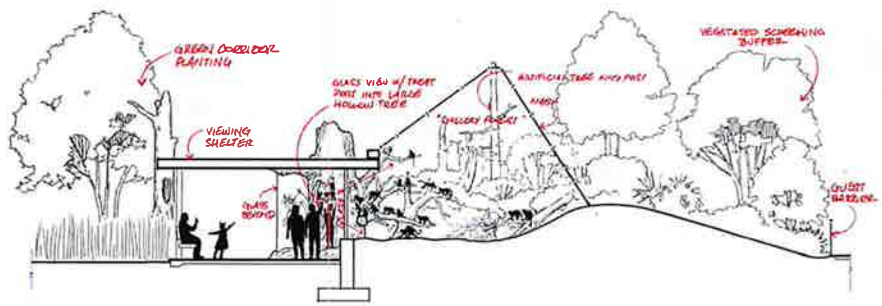
SHEET SIZE: ARCH E (36" x 48")
DATE: 05 October 2023
SCALE: As indicated
CHECKED:
SHEET

X321

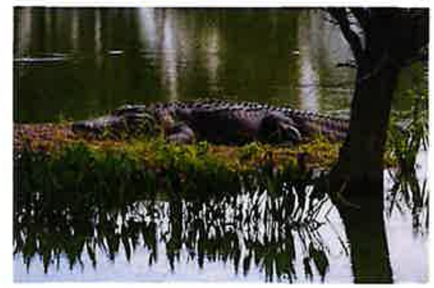
Schematic Plans



1 Alligator - Section



2 Squirrel Monkey - Section



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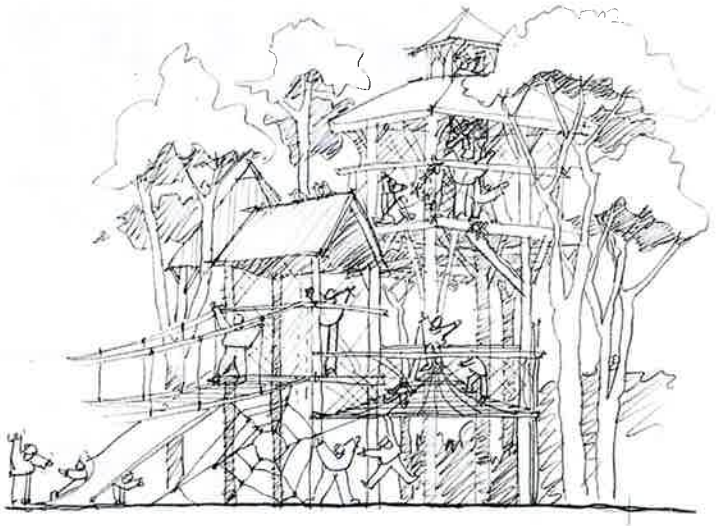
The New Zoo at Elk Grove

SECTIONS - ALLIGATOR AND SQUIRREL MONKEY

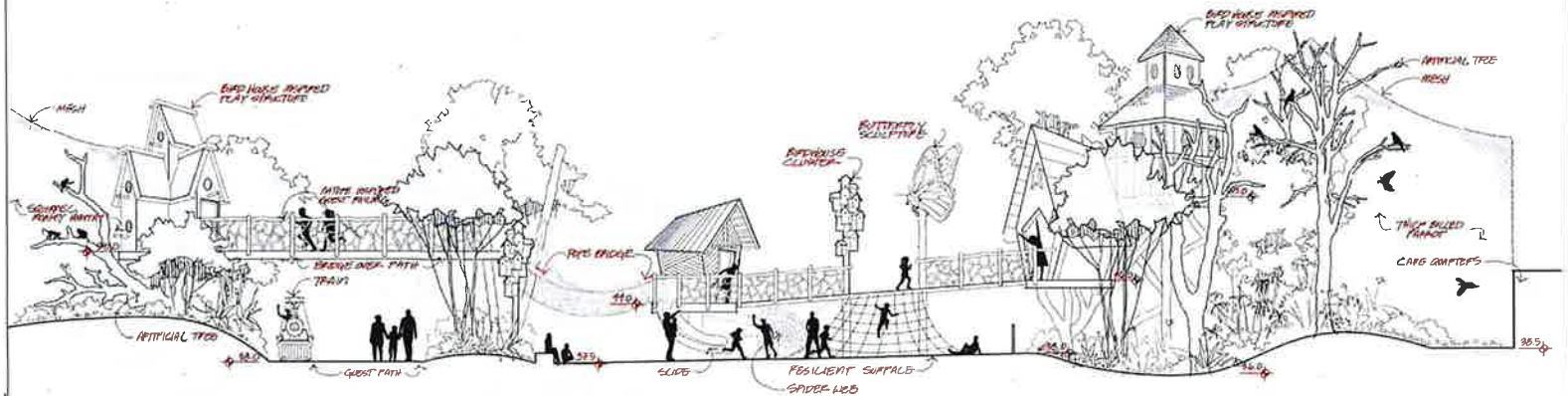
SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2022
SCALE	As indicated
CHECKED	SHRMA
SHEET	

X322

Schematic Plans



1 Play Area - Section



2 Thick Billed Parrot and Play - Section

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exp.

REV.	DATE	DESCRIPTION
1	06/17/22	For Review
2	10/04/22	For Pricing

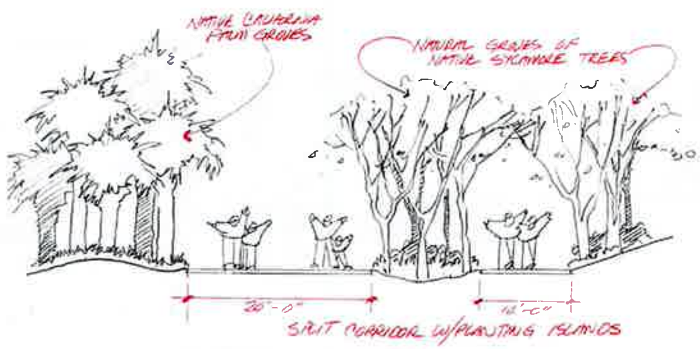
NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

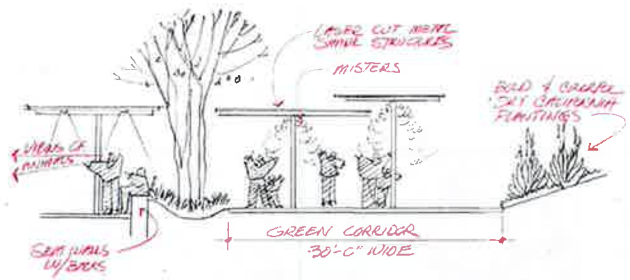
SECTIONS - PLAY

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2022
SCALE	As indicated
CHECKED	SMYDA
SHEET	X323

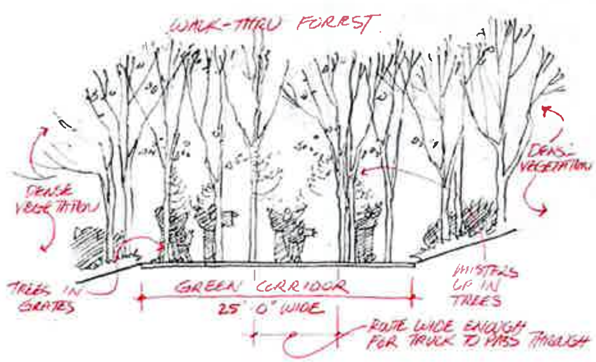
Schematic Plans



1 Green Corridor Planting Islands - Section



2 Green Corridor Shade Structure - Section



3 Green Corridor Walk Through Forest - Section

SAC ZOO

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exp.

NOT FOR CONSTRUCTION

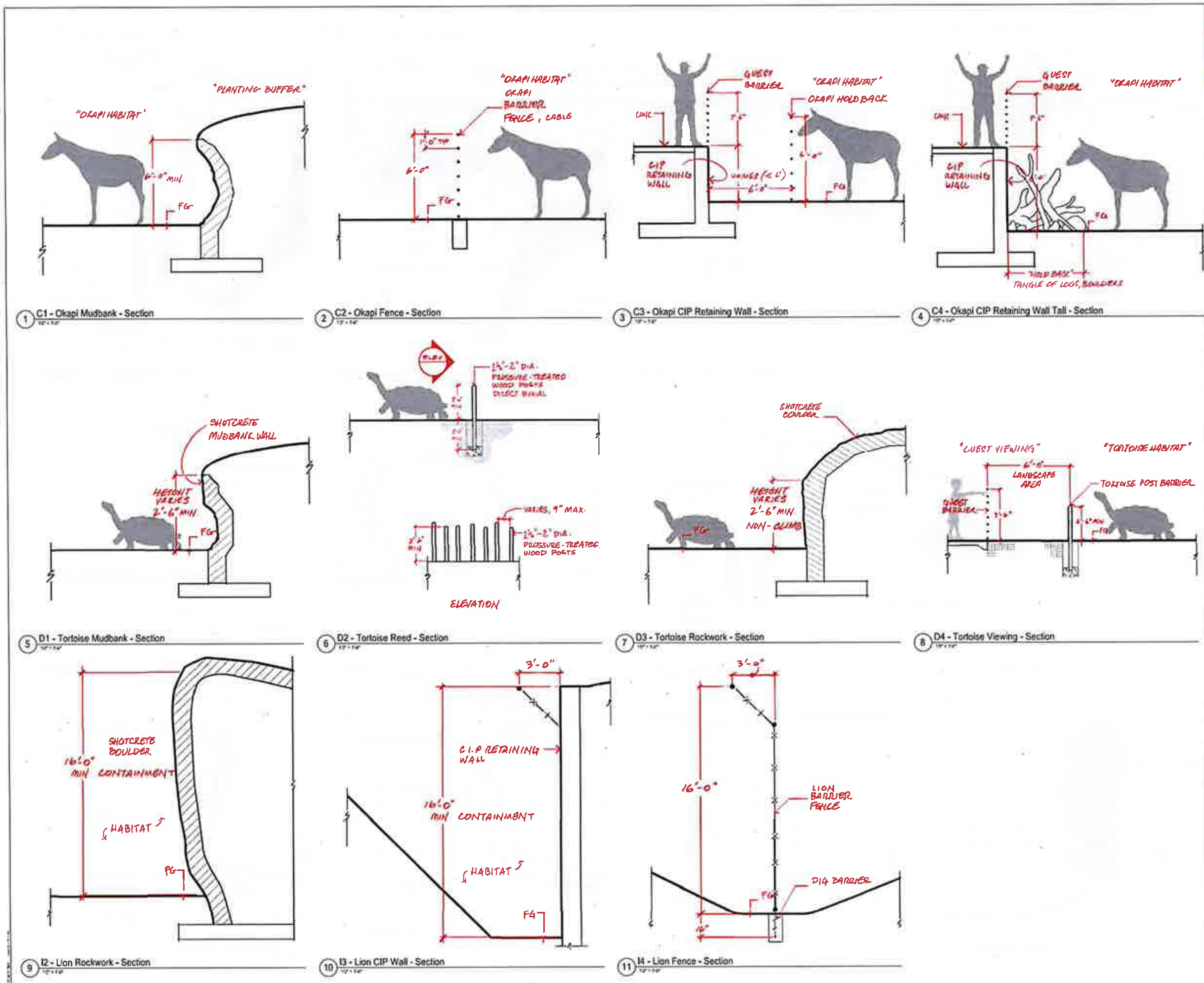
The New Zoo at Elk Grove

SECTIONS - GREEN CORRIDOR

SHEET SIZE: ARCH E (36" x 48")
DATE: 08 October 2023
SCALE: 1" = 1'-0"
CHECKED: SHR/Idc
SHEET

X324

Schematic Plans


"OKAPI HABITAT"
"PLANTING BUFFER"
6'-0" MIN.
FG
C1 - Okapi Mudbank - Section
"OKAPI HABITAT"
OKAPI BARRIER FENCE, CABLE
1'-0" TYP
6'-0"
FG
C2 - Okapi Fence - Section
GUEST BARRIER
"OKAPI HABITAT"
OKAPI HOLD BACK
CIP RETAINING WALL
VARIES (< 6')
6'-0"
FG
C3 - Okapi CIP Retaining Wall - Section
GUEST BARRIER
"OKAPI HABITAT"
CIP RETAINING WALL
"HOLD BACK"
TANGLE OF LOGS, BOULDERS
FG
C4 - Okapi CIP Retaining Wall Tall - Section
SHOTCRETE MUDBANK WALL
HEIGHT VARIES 2'-6" MIN
FG
D1 - Tortoise Mudbank - Section
1½"-2" DIA. PRESSURE-TREATED WOOD POSTS DIRECT BURIAL
VARIES, 9" MAX.
1½"-2" DIA. PRESSURE-TREATED WOOD POSTS
ELEVATION
D2 - Tortoise Reed - Section
SHOTCRETE BOULDER
HEIGHT VARIES 2'-6" MIN NON-CLIMB
FG
D3 - Tortoise Rockwork - Section
"GUEST VIEWING"
"TORTOISE HABITAT"
6'-0" LANDSCAPE AREA
TORTOISE POST BARRIER
GUEST BARRIER
FG
D4 - Tortoise Viewing - Section
SHOTCRETE BOULDER
16'-0" MIN CONTAINMENT
HABITAT
FG
I2 - Lion Rockwork - Section
3'-0"
C.I.P RETAINING WALL
16'-0" MIN CONTAINMENT
HABITAT
FG
I3 - Lion CIP Wall - Section
3'-0"
16'-0"
LION BARRIER FENCE
DIG BARRIER
FG
I4 - Lion Fence - Section

SAC ZOO

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The New Zoo at Elk Grove

BARRIER DETAILS - OKAPI, TORTOISE, LION

SHEET SIZE: ARCH E (36" x 48")

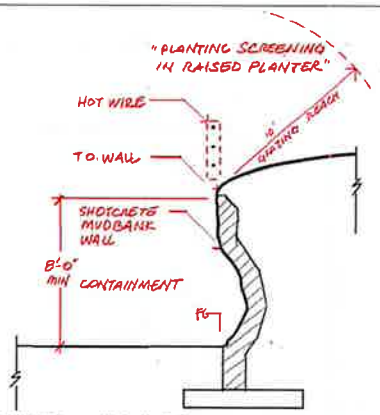
DATE: 06 October 2023

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

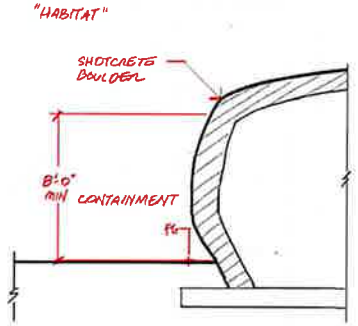
SHEET

X330

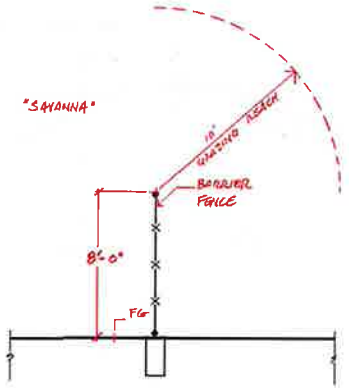
Schematic Plans



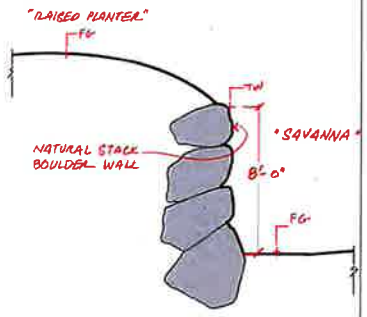
1 A1 & B1 Savanna Mudbank - Section



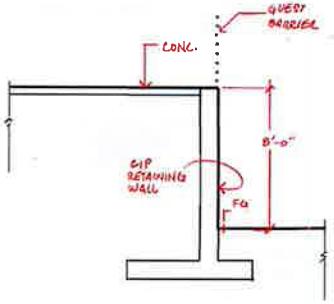
2 A2 & B2 Savanna Rockwork - Section



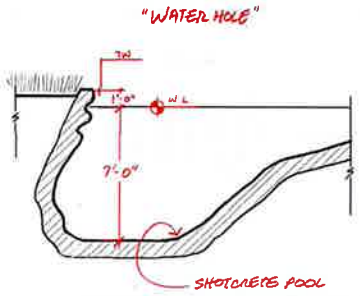
3 A3 & B3 Savanna Fence - Section



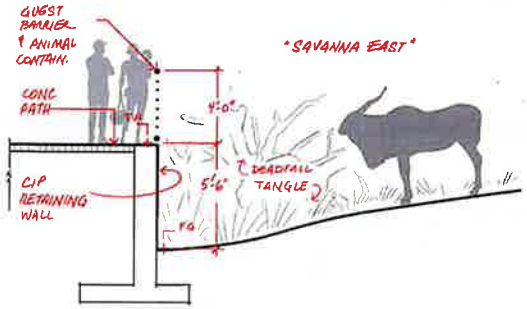
4 A4 & B4 Savanna Rock Wall - Section



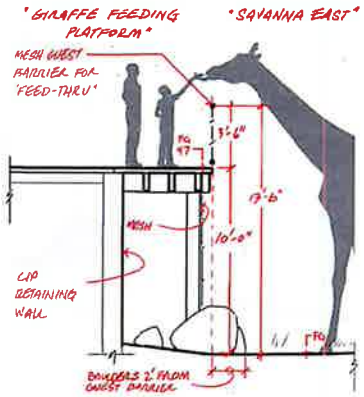
5 B5 Savanna CIP Retaining Wall - Section



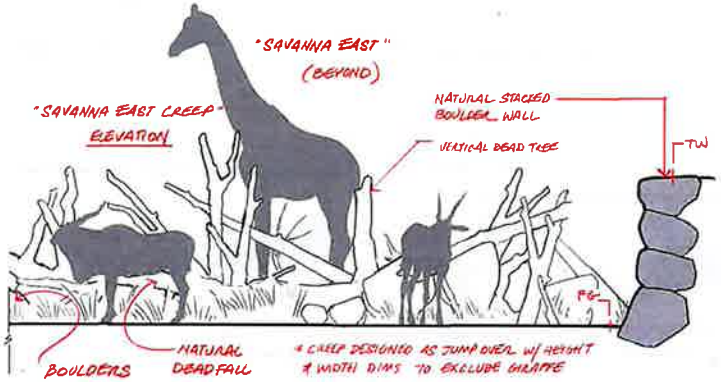
6 B6 Savanna Water as a Barrier - Section



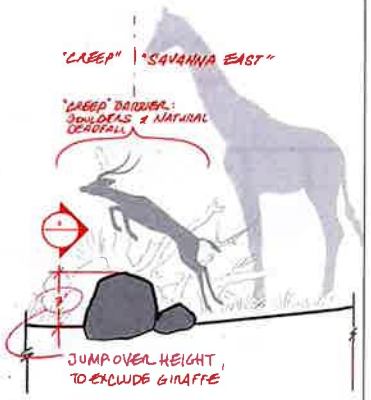
7 A5 Savanna CIP Wall View - Section



8 A8 Savanna Giraffe Feeding - Section



9 A7 Savanna Creep - Section Elevation



10 A7 Savanna Creep - Section

SAC 200

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740 Madrona Way N.E. #270
Bainbridge Island, WA 98110
phone (206) 842 3307
shrstudios.com

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REV.	DATE	DESCRIPTION
1	09/29/2023	For Review
2	10/06/2023	For Pricing

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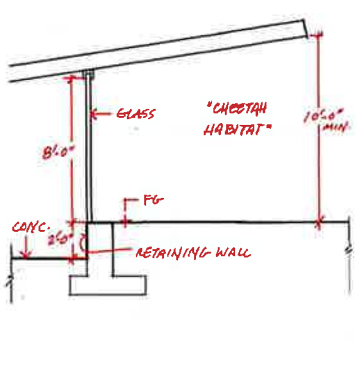
The New Zoo at Elk Grove

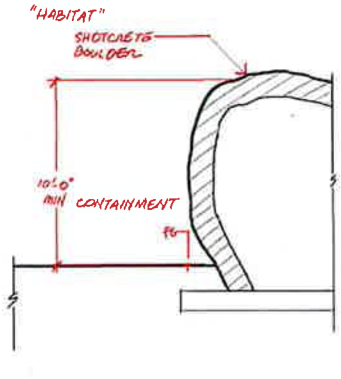
BARRIER DETAILS - SAVANNA

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1/2" = 1'-0"
CHECKED	SM/MK
SHEET	X331

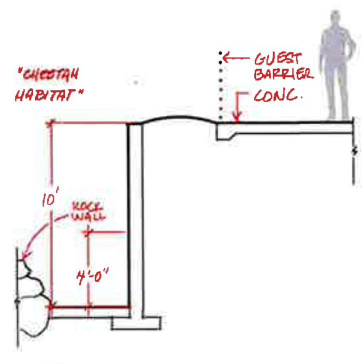
Schematic Plans



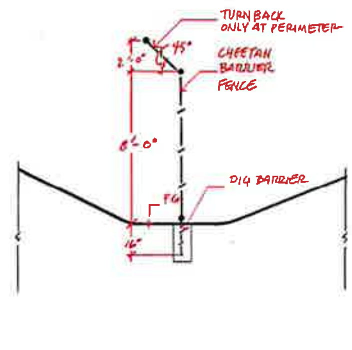
1 G1 - Cheetah Glass Viewing - Section



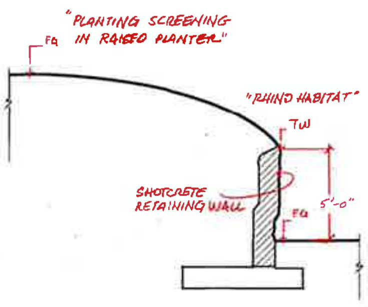
2 G2 - Cheetah Rockwork - Section



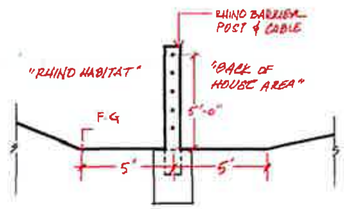
3 G3 - Cheetah CIP Wall - Section



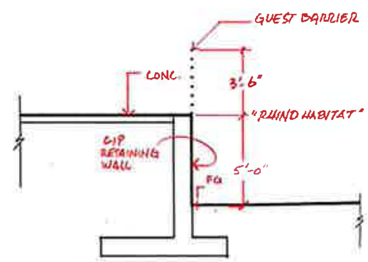
4 G4 - Cheetah Fence - Section



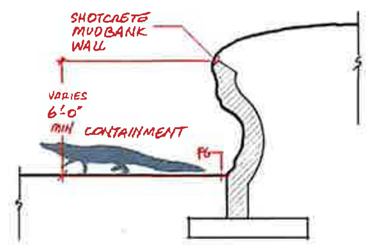
5 H2 - Rhino Mudbank - Section



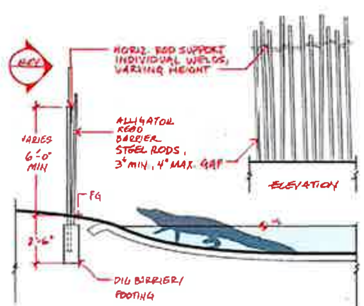
6 H3 - Rhino Cable - Section



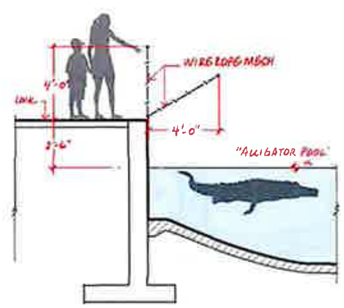
7 H4 - Rhino CIP Wall - Section



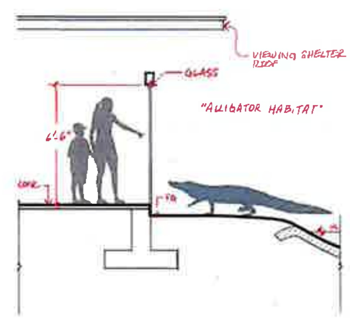
8 F1 - Alligator Mud Bank - Section



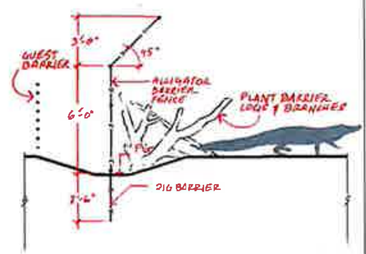
9 F2 - Alligator Reeds - Section



10 F3 - Alligator Glass Rail - Section



11 F4 - Alligator Glass Viewing - Section



12 F5 - Alligator Fence - Section

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The New Zoo at Elk Grove

BARRIER DETAILS - CHEETAH, RHINO, AND ALLIGATOR

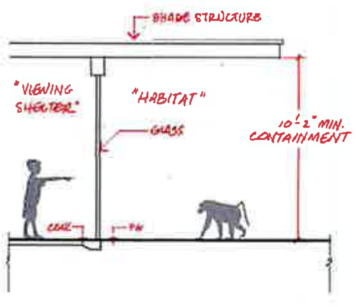
SHEET SIZE: ARCH E (36" x 48")

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

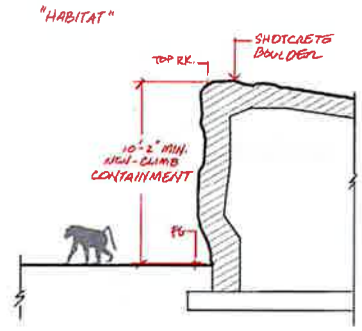
SHEET

X332

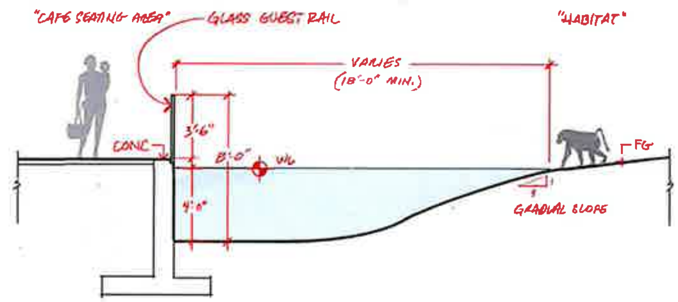
Schematic Plans



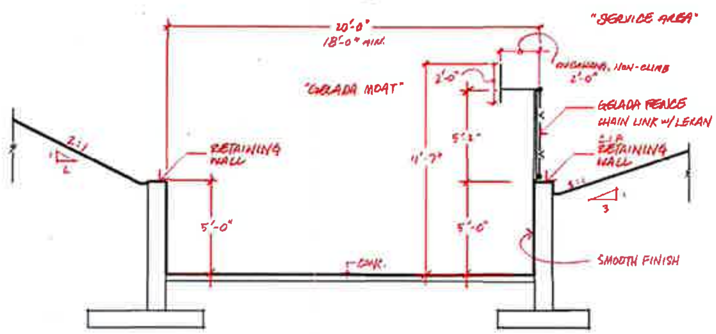
1 E1 - Gelada Glass Viewing - Section



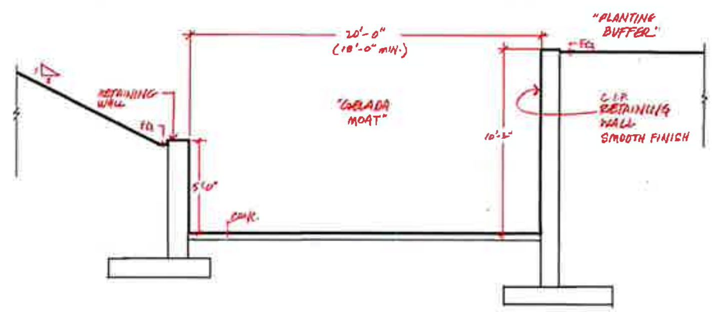
2 E2 - Gelada Boulder Rockwork - Section



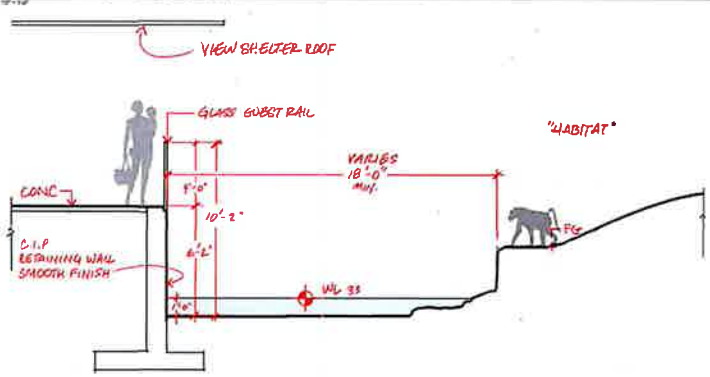
3 E3 - Gelada Water as a Barrier at Cafe - Section



4 E4 - Gelada Retaining Wall and Fence - Section



5 E5 - Gelada Retaining Moat Wall - Section



6 E6 - Gelada Retaining and Glass Rail at View Shelter - Section

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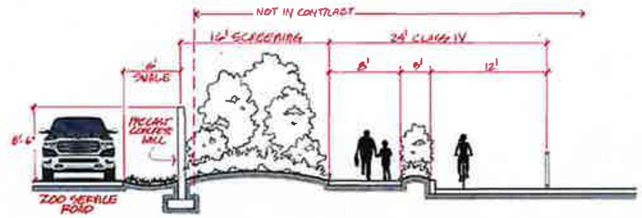
The New Zoo at Elk Grove

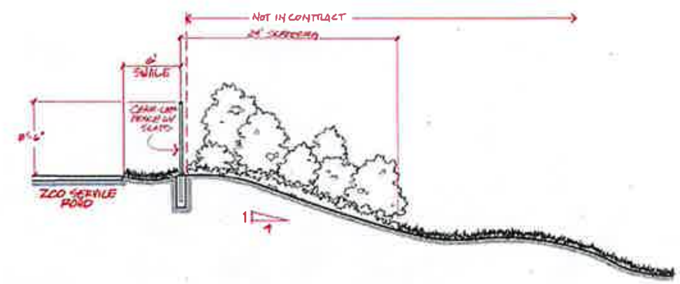
BARRIER DETAILS - GELADA

SHEET SIZE: ARCH E (36" x 48")
SCALE: 1/2" = 1'-0"
SHEET
X333

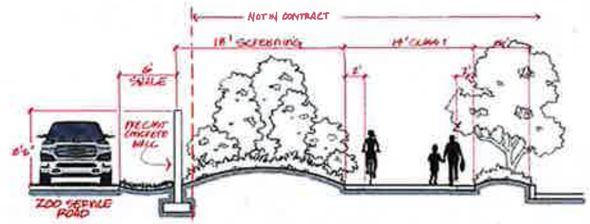
Schematic Plans



(1) Perimeter Fence - B Street Section



(2) Perimeter Fence - Channel Section



(3) Perimeter Fence - Lotz Section

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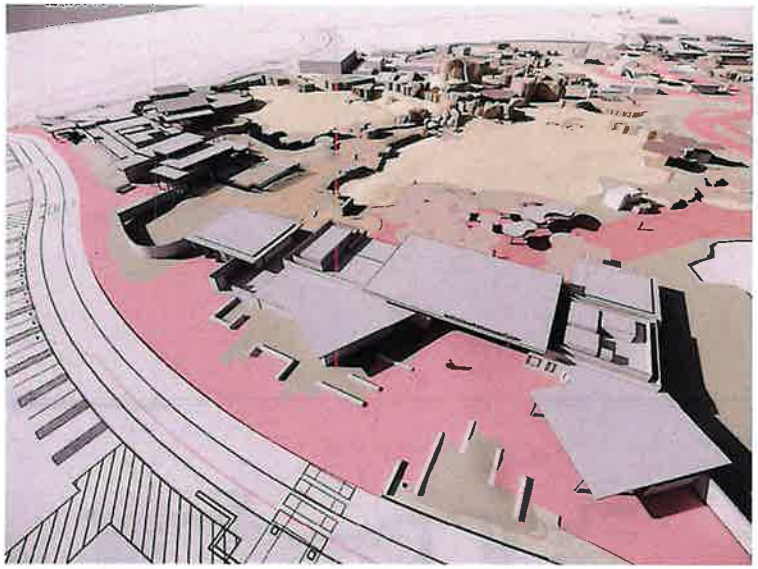
The New Zoo at Elk Grove

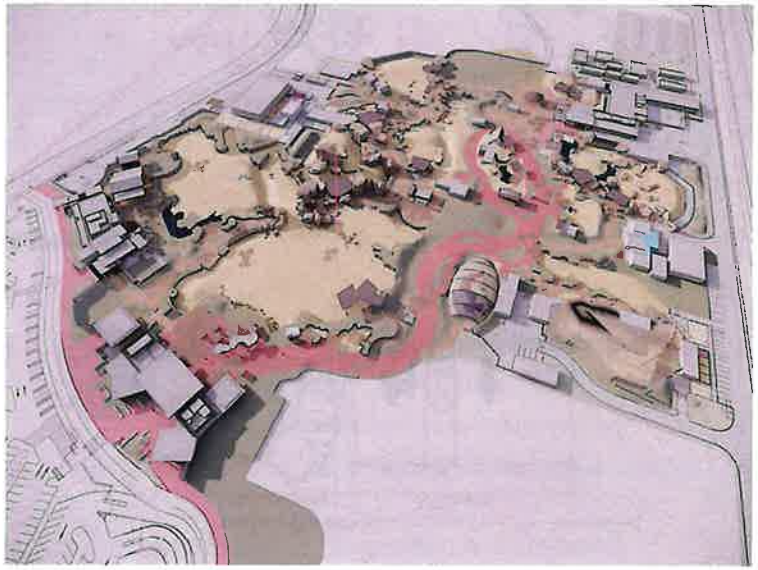
BARRIER DETAILS - PERIMETER FENCE

SHEET SIZE: ARCH E (36" x 48")
SCALE: 1/4" = 1'-0"
CHECKED:
SHEET:

X334

Schematic Plans





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exp.

REV	DATE	DESCRIPTION
1	06.15.2022	For Review
2	08.19.2022	For Pricing

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The New Zoo at Elk Grove

MODEL VIEWS

SHEET SIZE	ARCH D (24" x 36")
DATE	06 October 2022
SCALE	12" = 1'-0"
CHECKED	MANA
SHEET	X350

Schematic Plans

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The New Zoo at Elk Grove

MODEL VIEWS

SHEET SIZE ARCH D (24" x 36")
DATE 26 October 2021
SCALE 12" = 1'-0"
CHECKED SHR/NN
SHEET

X351

Schematic Plans

1 Site Character Zone Plan

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NOLL & TAM ARCHITECTS

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exp.

NUM	DATE	DESCRIPTION
1	01/29/2023	For Review
2	10/06/2023	For Pricing

The New Zoo at Elk Grove

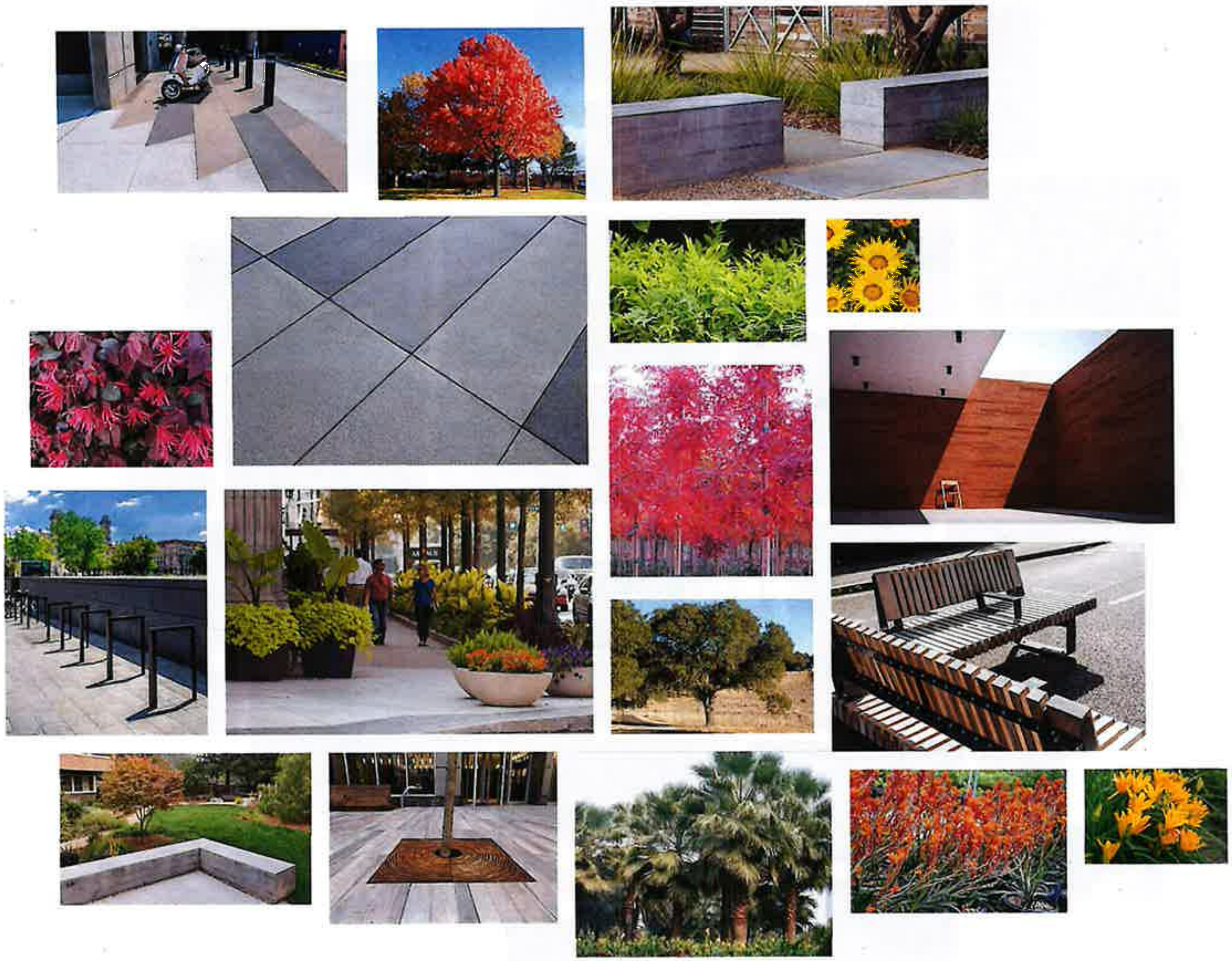
SITE CHARACTER ZONE PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1" = 80'-0"
CHECKED:	SHR/NTA

SHEET

X401

Schematic Plans



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exp.

REV	DATE	DESCRIPTION
1	[illegible]	For Review
2	[illegible]	For Pricing

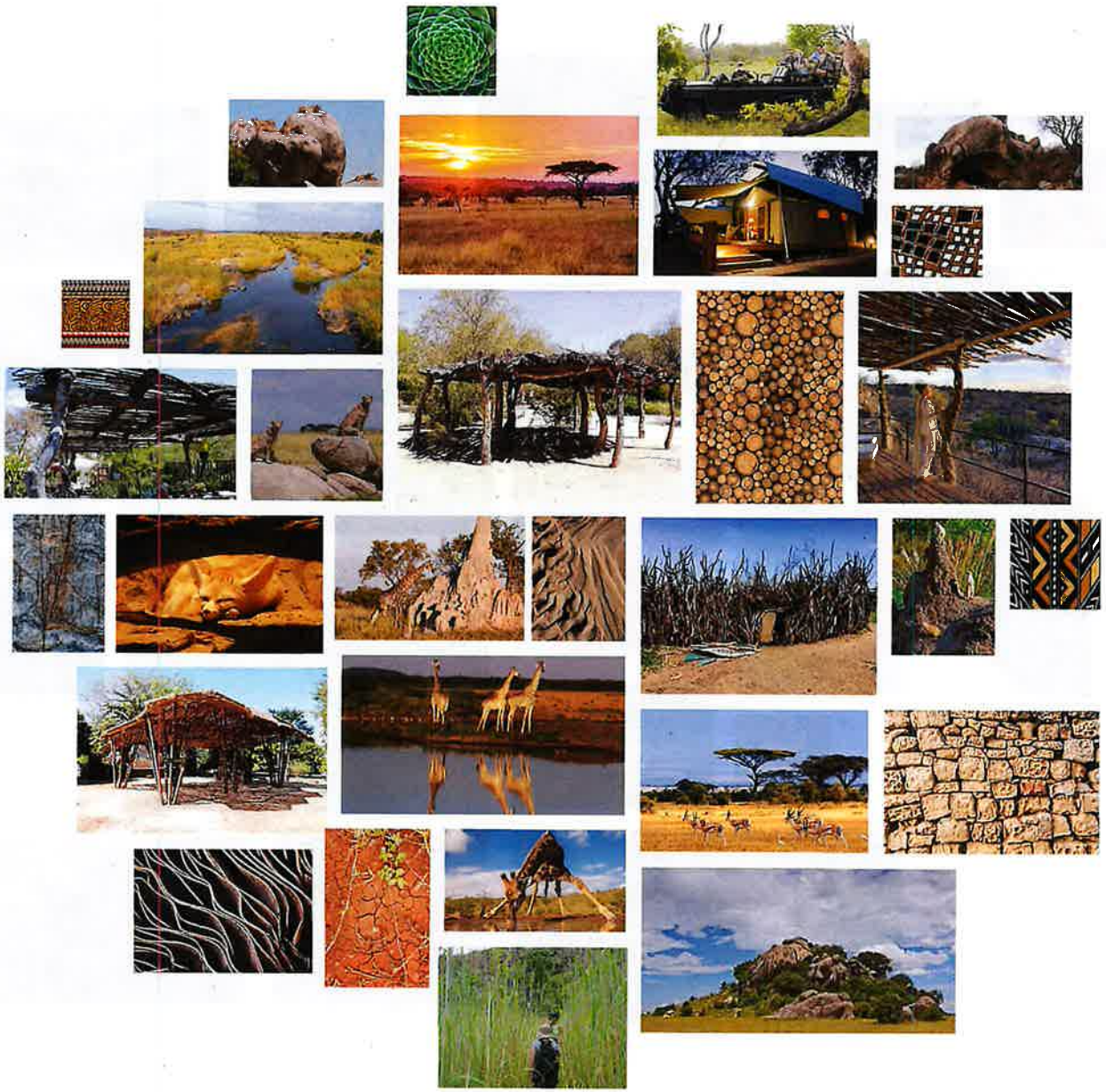
The New Zoo at Elk Grove

IMAGE BOARD - CITY WALK

SHEET SIZE	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE	12" = 1'-0"
CHECKED:	[illegible]
SHEET	

X402

Schematic Plans



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REV	DATE	DESCRIPTION
1	05/22/2023	For Review
2	10/06/2023	For Pricing

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The New Zoo at Elk Grove

IMAGE BOARD - AFRICA

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	12" = 1'-0"
CHECKED	SM/Mc

SHEET:

X403

Schematic Plans













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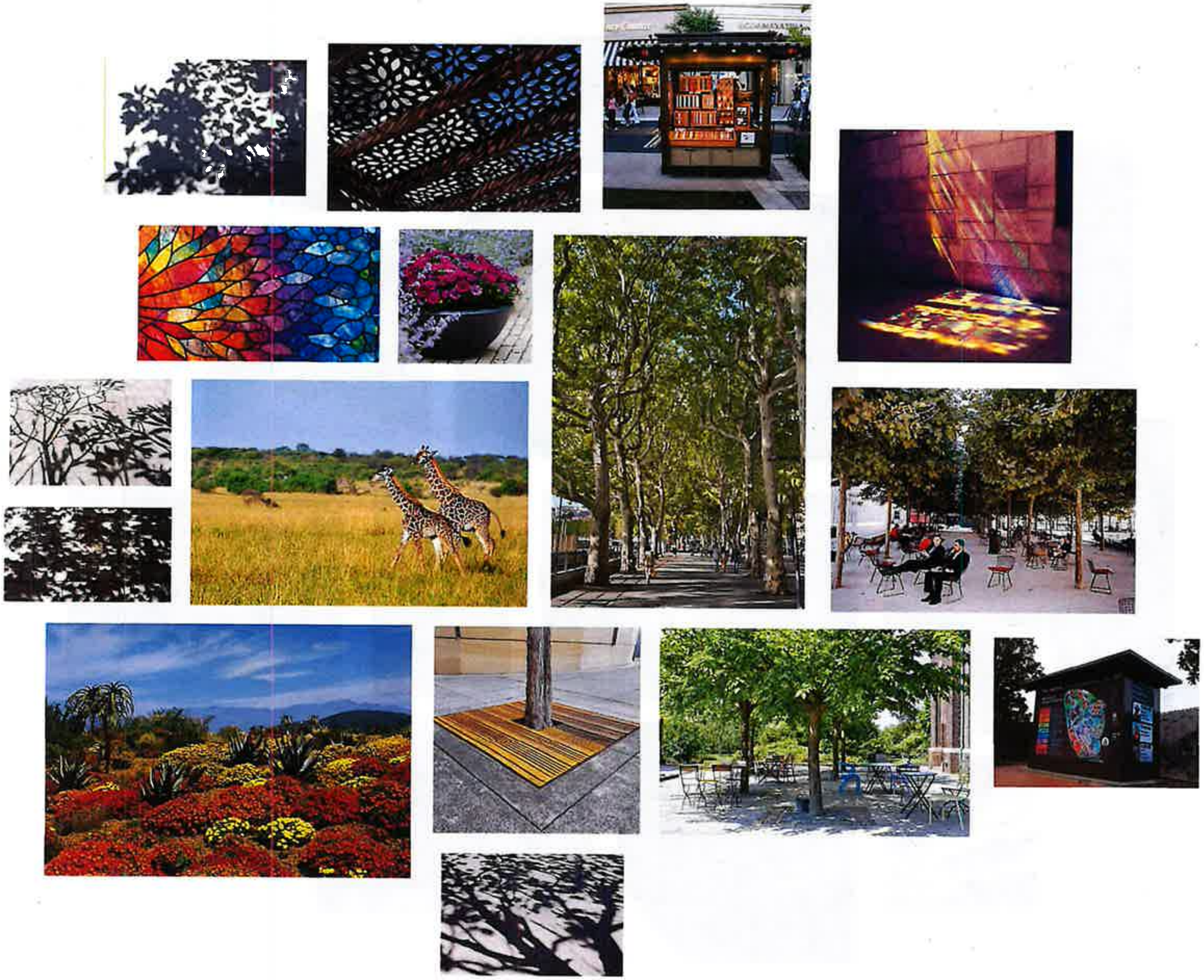
The New Zoo at Elk Grove

IMAGE BOARD - GREEN CORRIDOR

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	12" = 1'-0"
CHECKED	SM Kleiz
SHEET	X404

Schematic Plans



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NOLL & TAM ARCHITECTS

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REV	DATE	DESCRIPTION
1	[illegible]	[illegible]
2	[illegible]	[illegible]

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

IMAGE BOARD - ARRIVAL PLAZA

SHEET SIZE	ARCH E (36" x 48")
DATE:	08 October 2023
SCALE	12" = 1'-0"
CHECKED	SM/KM
SHEET	

X405

Schematic Plans

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NOLL & TAM ARCHITECTS

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exp.

REV	DATE	DESCRIPTION
1	[illegible]	For [illegible]
2	[illegible]	For [illegible]

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

IMAGE BOARD - BEER GARDEN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	12" = 1'-0"
CHECKED:	SM10Jk

SHEET

X406

Schematic Plans











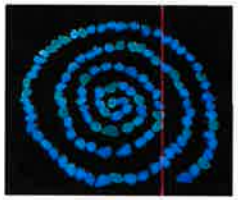







SAC ZOO

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NOLL & TAM ARCHITECTS

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TJP ENGINEERING

exp.

NO.	DATE	DESCRIPTION
1	09/22/2023	For Review
2	10/06/2023	For Pricing

The New Zoo at Elk Grove

IMAGE BOARD - THE PLAY ZONE

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	12" = 1'-0"
CHECKED:	SM/KM
SHEET	

X407

Schematic Plans

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

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TJP ENGINEERING

exp.

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

IMAGE BOARD - OKAPI

SHEET SIZE	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE	12" = 1'-0"
CHECKED	[illegible]
SHEET	

X408

Schematic Plans

SAC ZOO

SH'R Studios

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP ENGINEERING

exp.

NOT FOR CONSTRUCTION

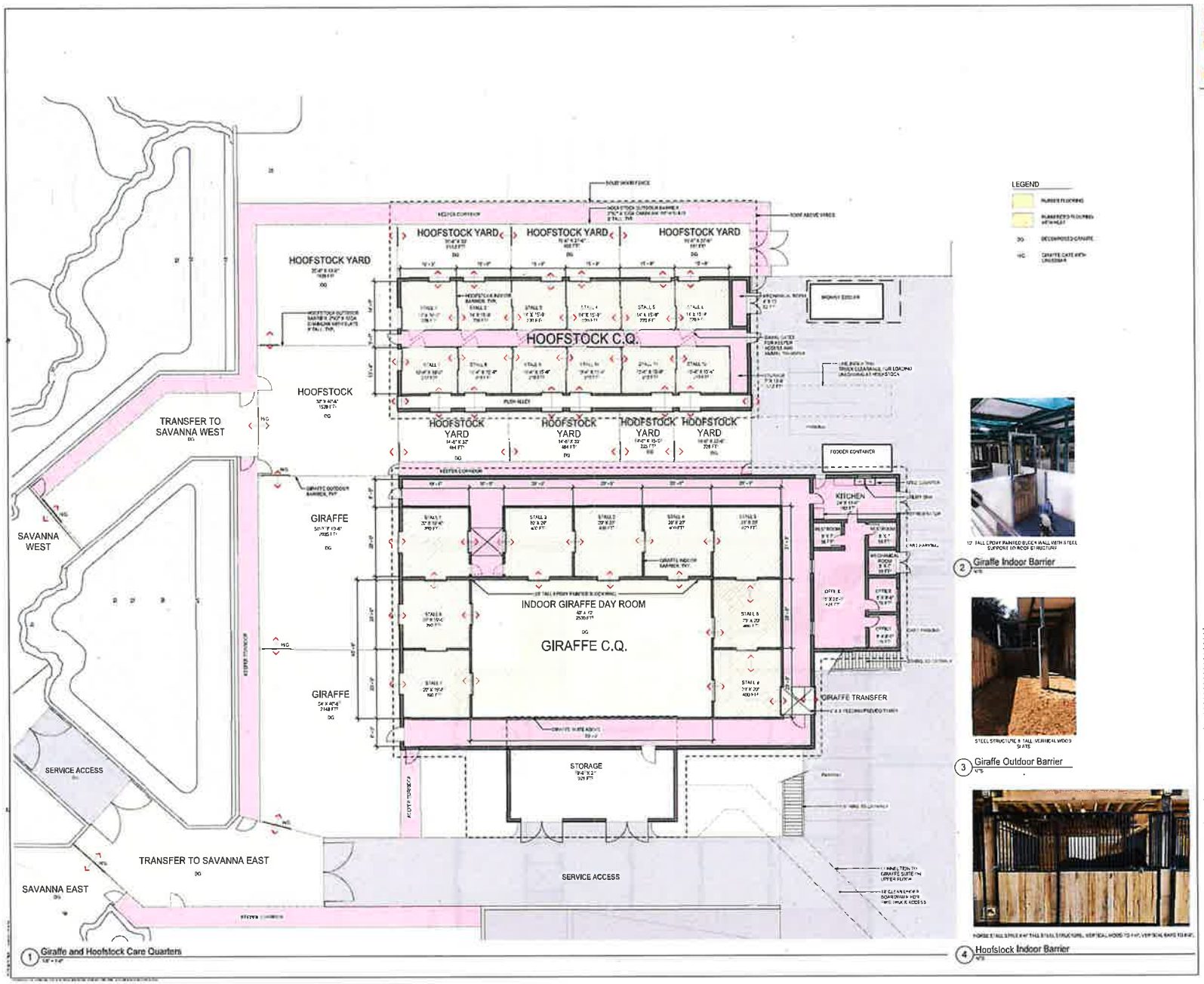
The New Zoo at Elk Grove

IMAGE BOARD - GELADA

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2021
SCALE:	12" = 1'-0"
CHECKED:	SAWGK
SHEET	

X409

Schematic Plans



1 Giraffe and Hoofstock Care Quarters

2 Giraffe Indoor Barrier

3 Giraffe Outdoor Barrier

4 Hoofslock Indoor Barrier

SAC ZOO

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exp.

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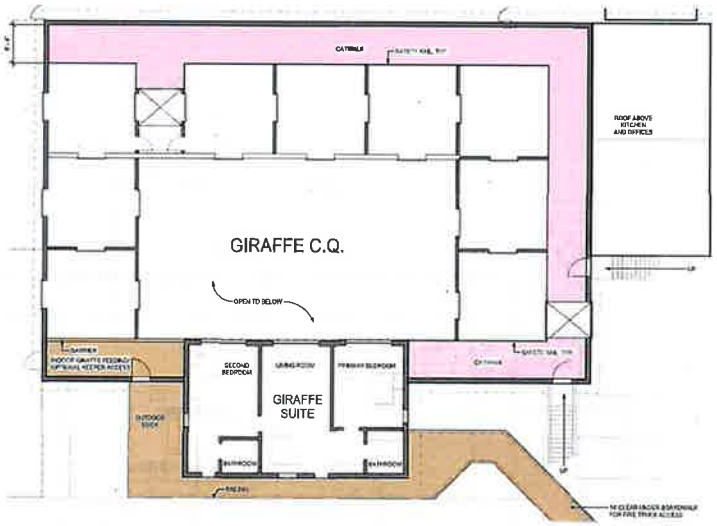
The New Zoo at Elk Grove

PHASE I CARE QUARTERS PLANS

SHEET SIZE	ARCH C (18" x 24")
DATE	26 October 2021
SCALE	As indicated
CHECKED	SANDIE
SHEET	X701

Schematic Plans



1 Giraffe Care Quarters- Second level

SAC ZOO

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NOLL & TAM ARCHITECTS

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TJP ENGINEERING

exp.

REV	DATE	DESCRIPTION
1	05/20/2023	For Review
2	10/06/2023	For Pricing

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

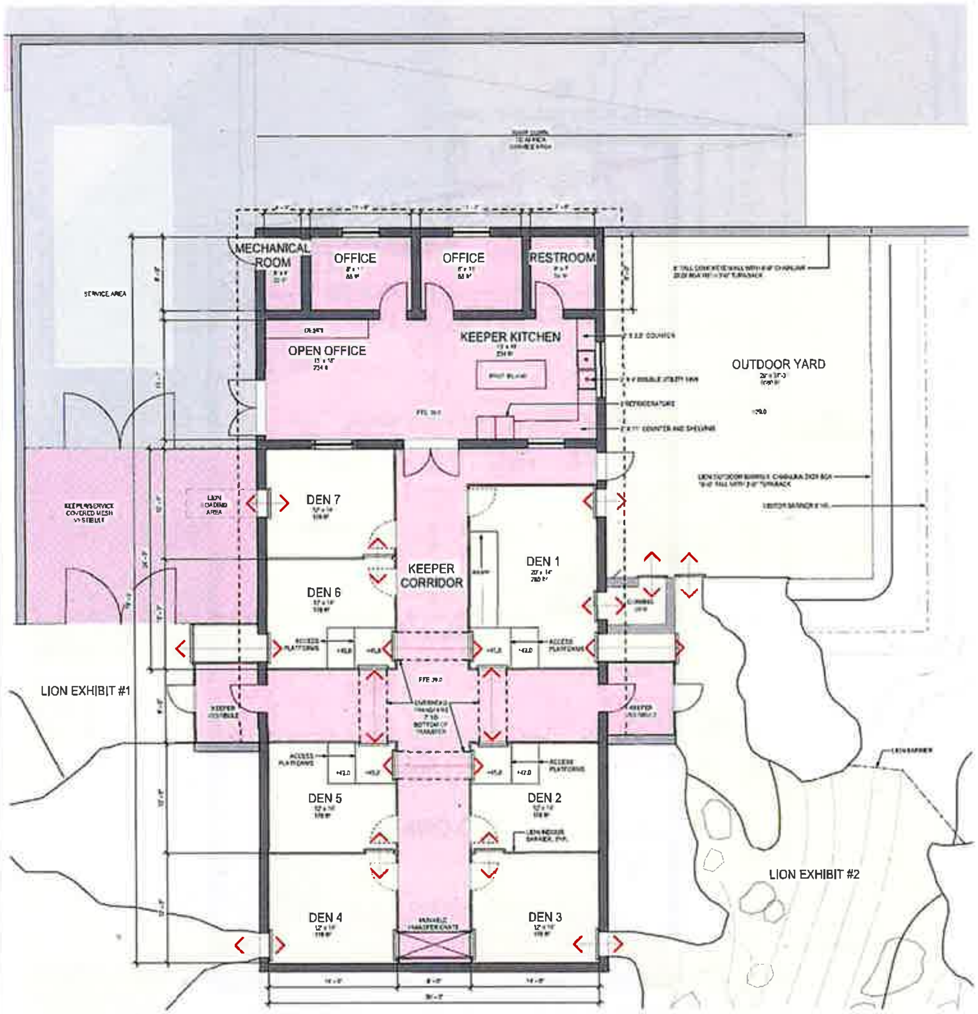
PHASE 1 CARE QUARTERS PLANS

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1/8" = 1'-0"
CHECKED:	SM/BA

SHEET

X702

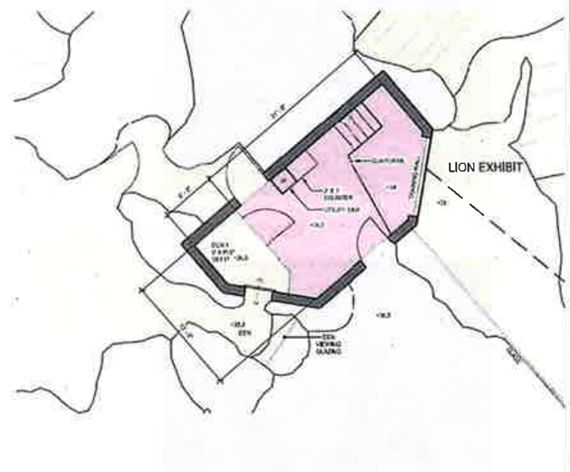
Schematic Plans



1 Lion Care Quarters

3 Lion Indoor Barrier

4 Lion Overhead Transfer



2 African Small Animal Care Quarters

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP ENGINEERING

exp.

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

PHASE 1 CARE QUARTERS PLANS

SHEET SIZE: ARCH E

DATE:

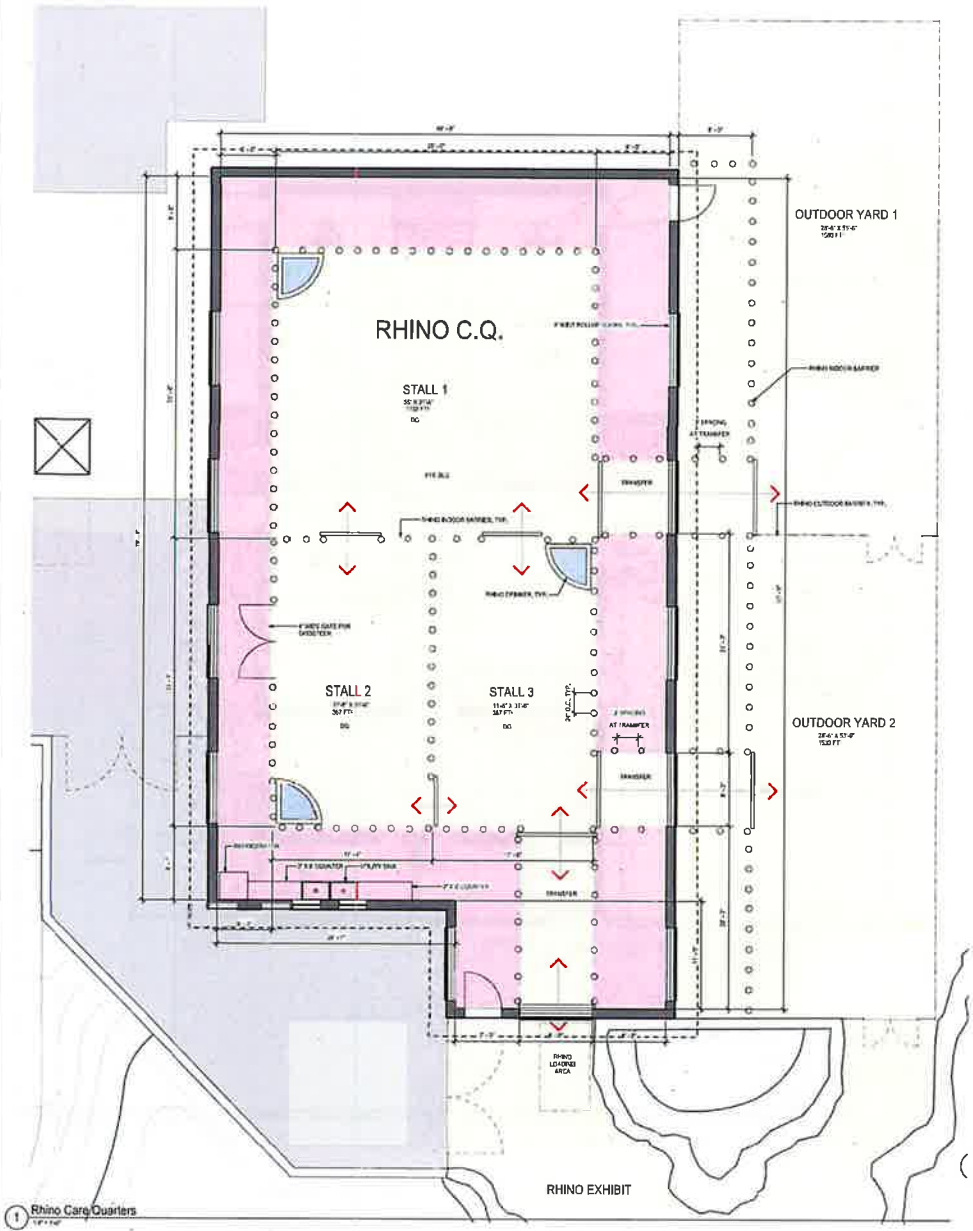
SCALE: As indicated

CHECKED:

SHEET

X703

Schematic Plans



1 Rhino Care Quarters

2 Rhino Outdoor Yard Barrier

3 Rhino Indoor Barrier

4 Rhino Drinker

SAC ZOO

SH R Studios
NOLL & TAM ARCHITECTS
Kimley»Horn
TJP ENGINEERING
exp.

REV	DATE	DESCRIPTION
1	09/27/2023	For Review
2	10/06/2023	For Pricing

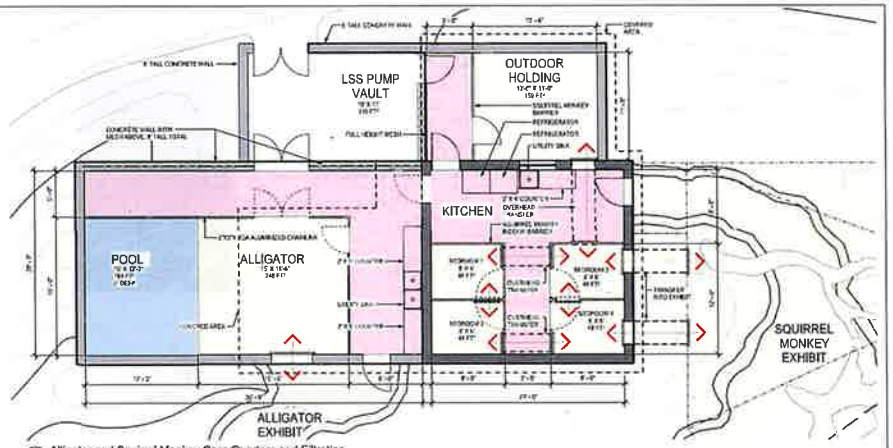
NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

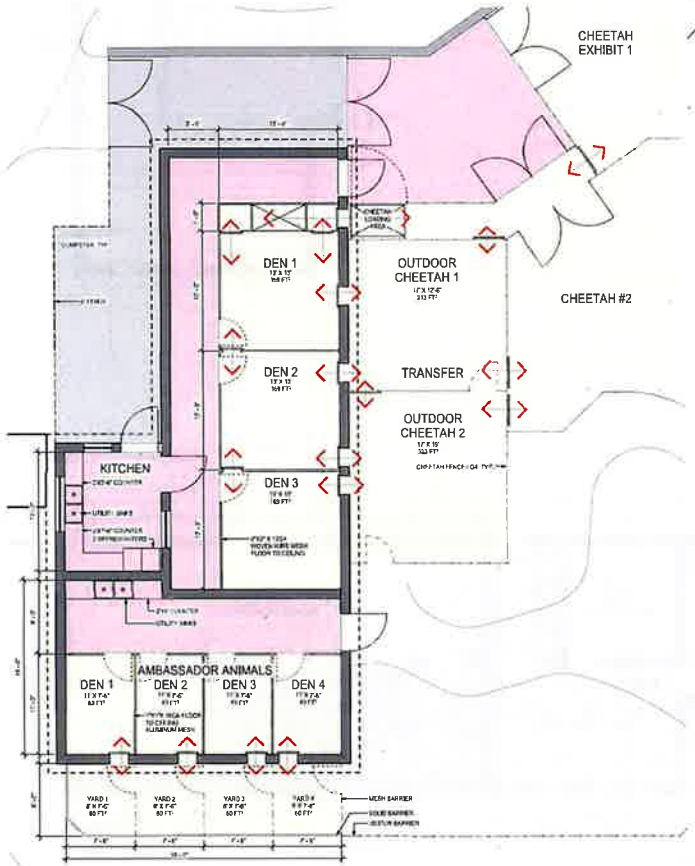
PHASE 1 CARE QUARTERS PLANS

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	As indicated
CHECKED:	SM/NM
SHEET:	X704

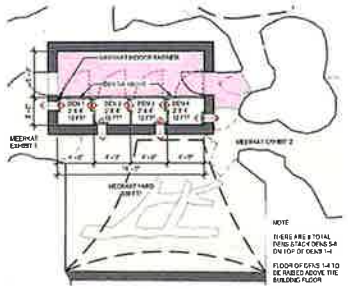
Schematic Plans



1 Alligator and Squirrel Monkey Care Quarters and Filtration

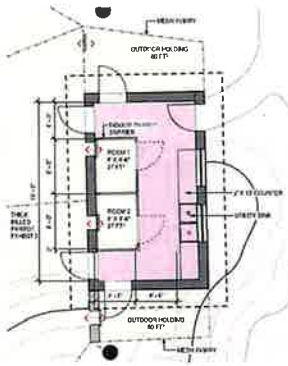


2 Cheetah Care Quarters



3 Meerkat Care Quarters

4 Squirrel Monkey and Meerkat Indoor Barrier



5 Parrot Care Quarters

6 Indoor Parrot Barrier

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

NOT FOR CONSTRUCTION

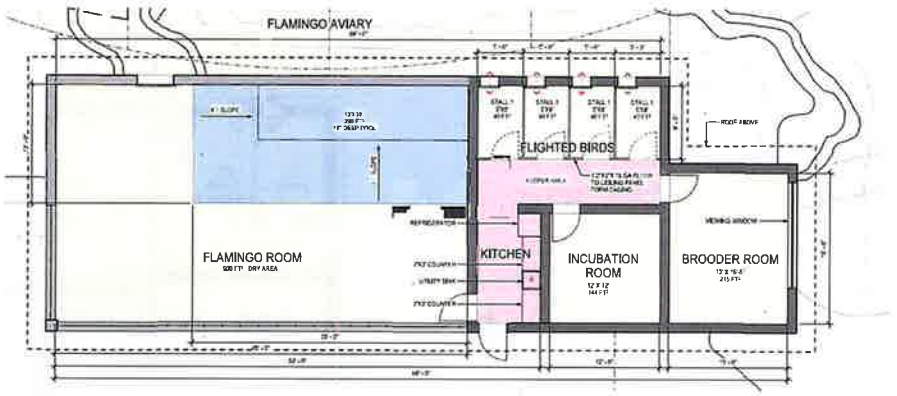
The New Zoo at Elk Grove

PHASE I CARE QUARTERS PLANS

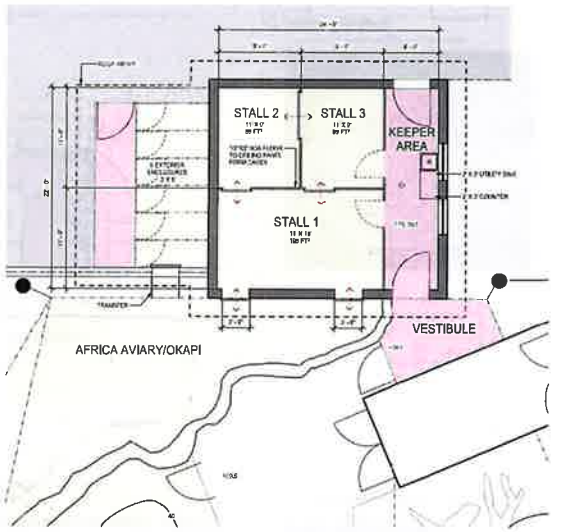
SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2023
SCALE	As indicated
CHECKED	SHR/JAL
SHEET	

X705

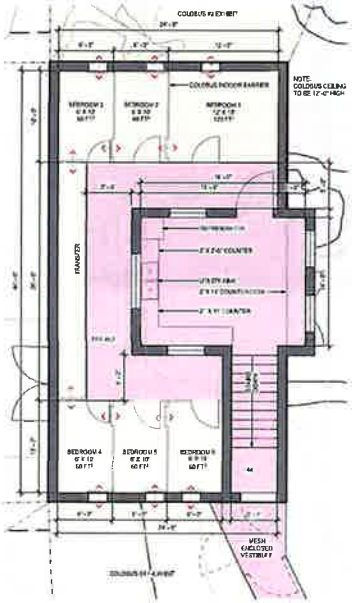
Schematic Plans



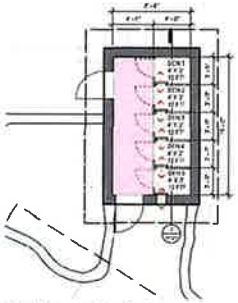
1 Flamingo Care Quarters, Brooder



2 Africa Aviary Care Quarters



3 Colobus Care Quarters



4 Dwarf Mongoose Care Quarters

5 Colobus and Dwarf Mongoose Indoor Barrier

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

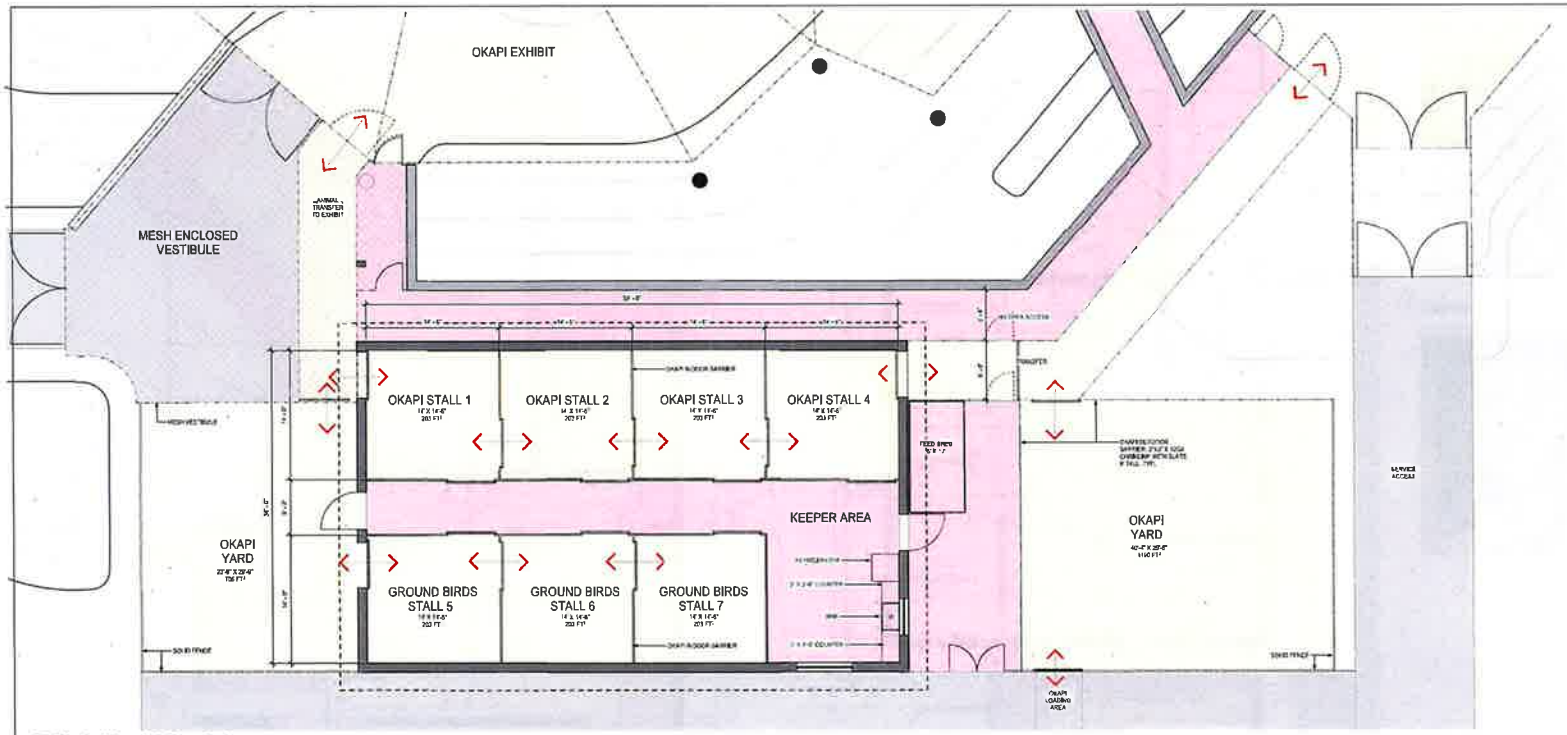
NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

PHASE 1 CARE QUARTERS PLANS

SHEET SIZE	ARCH E (36" x 48")
DATE:	28 October 2021
SCALE	As indicated
CHECKED	MARSdc
SHEET	X706

Schematic Plans

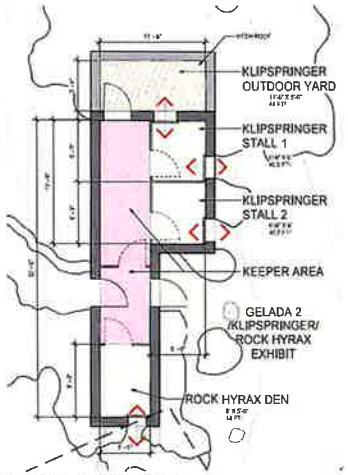


1 Okapi and Ground Bird Care Quarters

2 Giant Tortoise Care Quarters

3 Okapi Indoor Barrier

4 Tortoise Barrier



5 Klipspringer, Hyrax Care Quarters

6 Klipspringer and Hyrax Indoor Barrier

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

NOT FOR CONSTRUCTION

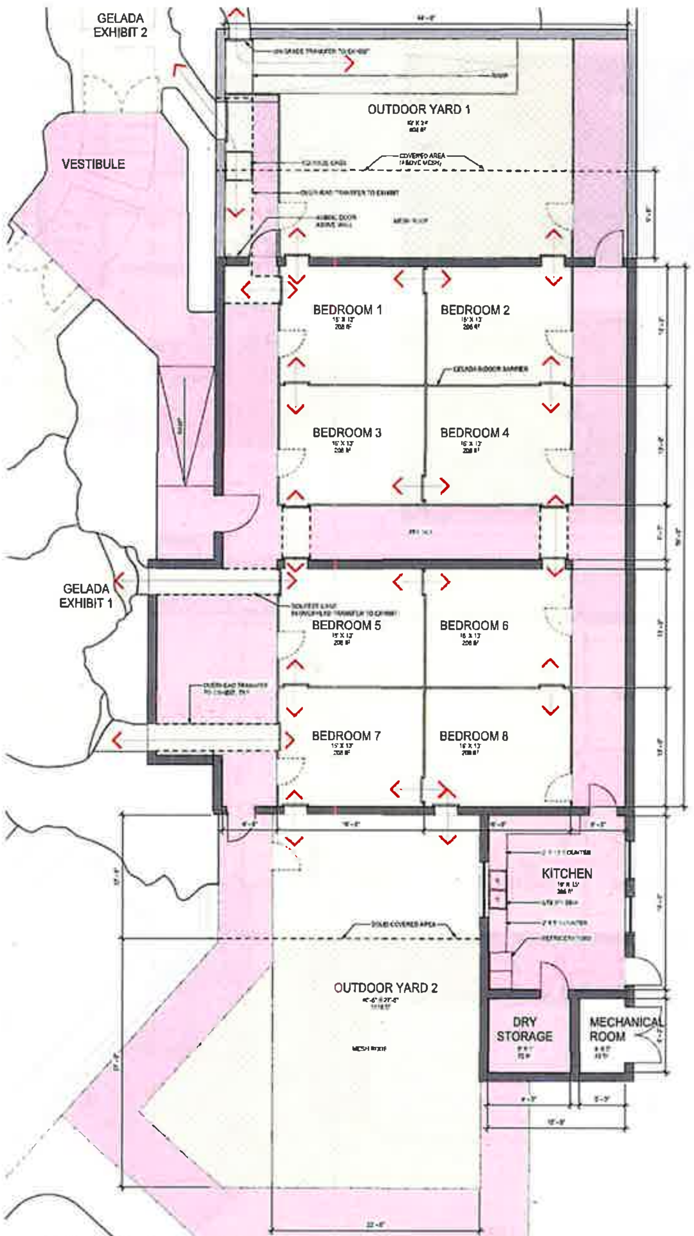
The New Zoo at Elk Grove

PHASE 1 CARE QUARTERS PLANS

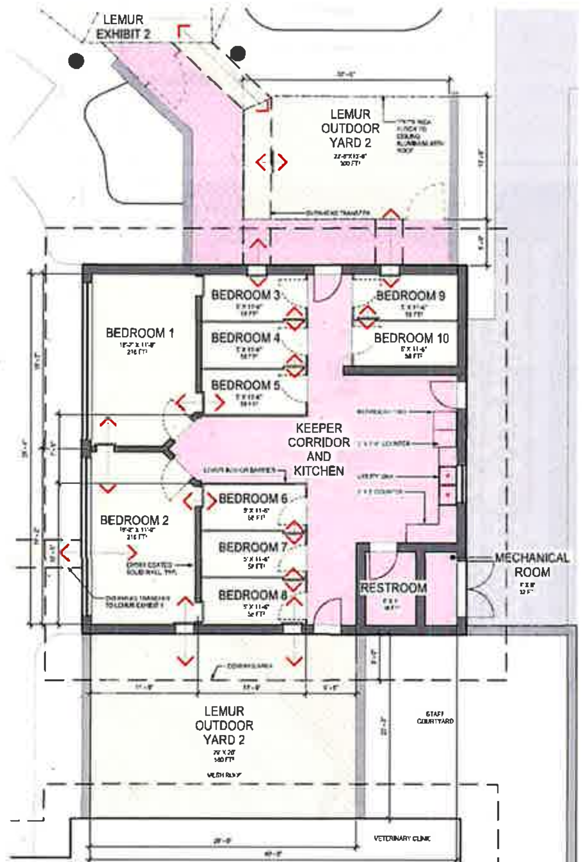
SHEET SIZE ARCH E (36" x 48")
DATE: 06 October 2023
SCALE: As indicated
CHECKED: SMW/dc
SHEET:

X707

Schematic Plans



1 Gelada Care Quarters



2 Lemur Care Quarters

3 Gelada Indoor Barrier

4 Lemur Indoor Barrier

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP ENGINEERING

exp.

The New Zoo at Elk Grove

PHASE 1 CARE QUARTERS PLANS

X708

Schematic Plans

EXHIBIT C4

1 ENTRY - FROM PARKING LOT / CITY WALK

1 ENTRY - FROM ZOO

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

ENTRY - RENDERS

SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2023
SCALE	
CHECKED	NAT
SHEET	

A1-0.01

1 CANOPY - STEEL PLATE BRANCHING TREE COLUMN

2 CANOPY - STEEL PLATE BRANCHING TREE COLUMN

SAC ZOO

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The New Zoo at Elk Grove

ENTRY - RENDERS

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2022
SCALE	
CHECKED	NAT
SHEET	

A1-0.02

EDUCATION ENTRY - FROM PARKING LOT / CITY WALK

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Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

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The New Zoo at Elk Grove

ENTRY - RENDERS

SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2023
SCALE	
CHECKED	NAT
SHEET	A1-0.03

1 Main Entry and Education Entry - W

4 Education Entry - NW

3 Main Entry - SW

2 Main Entry - W

6 Education Entry - NE

5 Retail - SE

8 Admin / Restrooms - SE

7 Admin / Restrooms - NE

SAC ZOO

SH/R Studios

NOLL & TAM ARCHITECTS

729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

ENTRY - 3D VIEWS

SHEET SIZE
DATE
SCALE
CHECKED
SHEET

A1-0.11

1 ENTRY - FIRST FLOOR PLAN

SAC ZOO

SHIR Studios

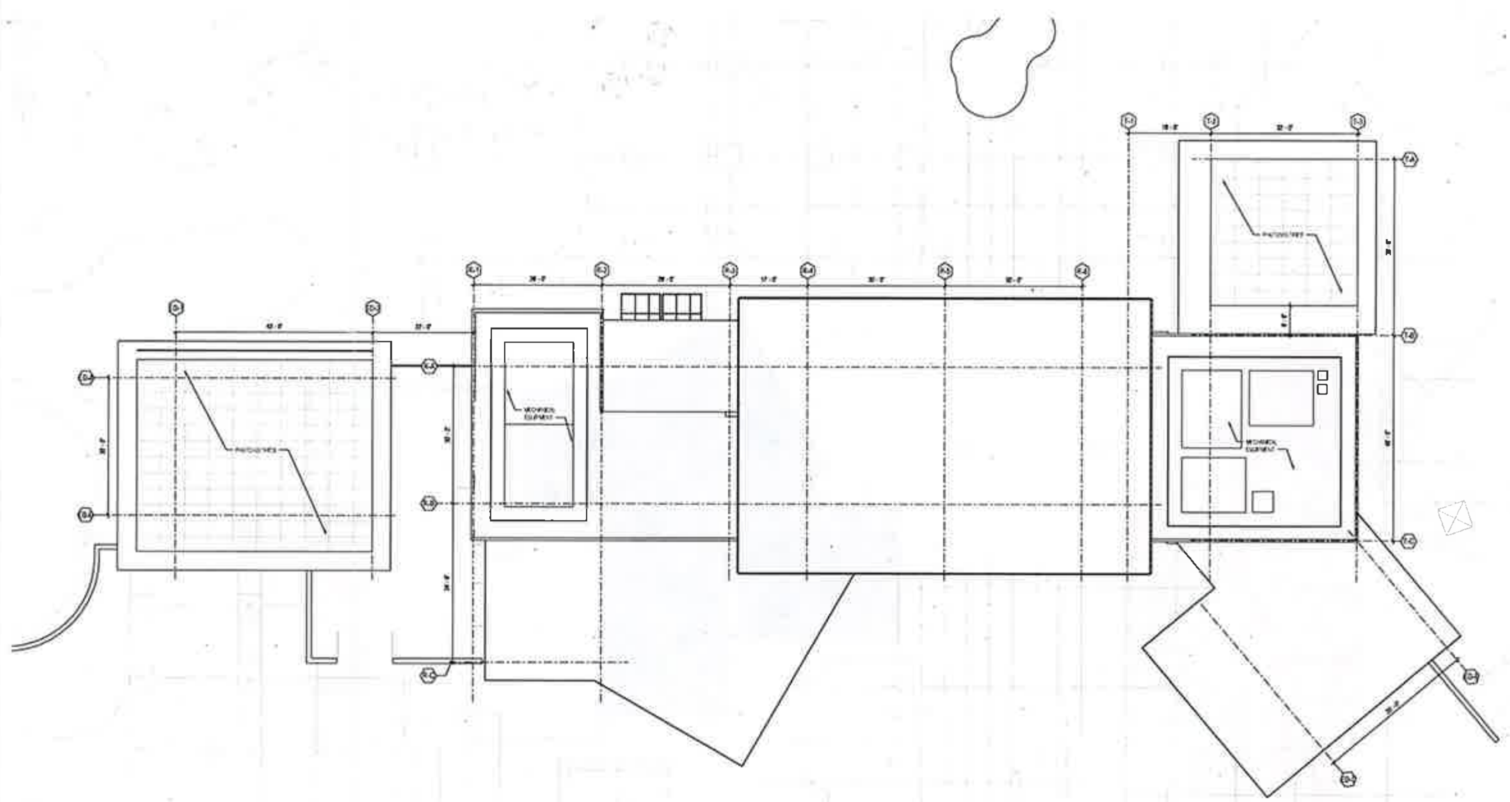
NOLL & TAM ARCHITECTS

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

ENTRY - FLOOR PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1/8" = 1'-0"
CHECKED:	N&T
SHEET:	A1-2.31



ENTRY - ROOF PLAN

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

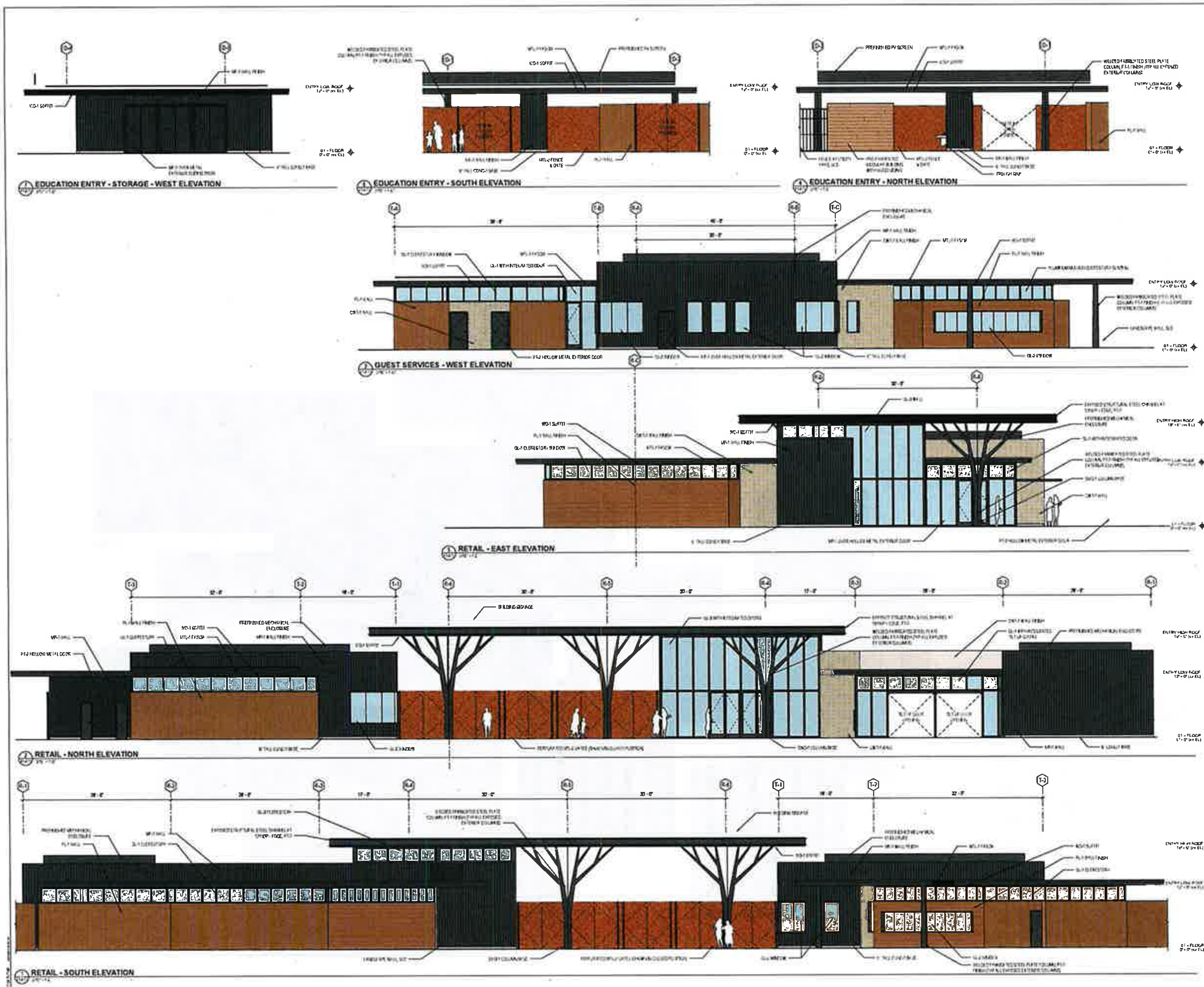
NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

ENTRY - ROOF PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1/8" = 1'-0"
CHECKED:	NAT
SHEET:	

A1-2.33



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728 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

ENTRY - EXTERIOR ELEVATIONS

SHEET SIZE	ARCH E (36" x 48")
DATE	[illegible]
SCALE	3/16" = 1'-0"
CHECKED	NAT
SHEET	A1-3.11

EXTERIOR FINISH LEGEND

METAL

MP-1	CORRUGATED METAL PANEL, FACTORY FINISHED
MP-2	DECORATIVE CUSTOM LASER CUT METAL PANEL, FACTORY FINISHED
MTL-1	PREFINISHED ALUMINUM SHEET METAL, COLOR 1 (CHARCOAL)
MTL-2	SPECIALTY FINISH METAL, PATINA FINISH OVER GALVANIZED METAL
MTL-3	PREFINISHED ALUMINUM SHEET METAL, COLOR 2 (BROWN)

WOOD

WD-1	EXTERIOR PREMANUFACTURED PANELIZED WOOD CEILING - STAIN 1
WD-2	EXTERIOR PREMANUFACTURED PANELIZED WOOD CEILING - STAIN 2
WD-3	EXTERIOR EUCALYPTUS POLE
SWD-1	SOLID WOOD - STAIN 1
SWD-2	SOLID WOOD - STAIN 2

COMPOSITE DECKING

CS-1	[illegible]

CERAMIC WALL TILE

CWT-1	EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 1
CWT-2	EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 2
CWT-3	EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 3

PLASTER

PL-1	EXTERIOR PLASTER INTEGRAL COLOR [illegible] FINISH

PAINT

PT-1	FACTORY APPLIED PVDF COATING, COLOR TO MATCH MP-1
PT-2	EXTERIOR METAL FINISH, COLOR TO MATCH MP-1

GLAZING

GL-1	ALUMINUM STOREFRONT SYSTEM, CHARCOAL GREY MULLION
GL-2	ALUMINUM FRAMED WINDOW WITH DEEP FRAME PROFILE, OPERABLE PANES AS INDICATED
GL-3	GLULAM SUPPORTED DOUBLE HEIGHT STOREFRONT SYSTEM WITH CERAMIC FRIT ON GLAZING
GL-4	ALUMINUM STOREFRONT SYSTEM BUTT GLAZED, SQUARE PANES
GL-5	ALUMINUM STOREFRONT SYSTEM WITH TRANSLUCENT GLAZING WATER PATTERN

CONCRETE

CONC-1	EXPOSED EXTERIOR CONCRETE CURB
CMU-1	SPLIT FACE CMU

SAC ZOO

SH!R Studios

NOLL & TAM ARCHITECTS
729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

ENTRY - EXTERIOR FINISH LEGEND

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October 2023
SCALE:	1/8" = 1'-0"
CHECKED:	NAT
SHEET	A1-9.11

1 LODGE ENTRY - FROM PARKING LOT

2 LODGE ENTRY - FROM ZOO

SAC ZOO

SHR Studios

NOLL & TAM ARCHITECTS

720 Heinz Avenue
Berkeley, CA 94710
tel 510.543.2200
fax 510.543.2251

REV	DATE	DESCRIPTION
1	10.26.12	For Review
2	10.08.12	For Pricing

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

LODGE - RENDERS

SHEET SIZE:	ARCH E (36" x 48")
DATE:	08 October 2012
SCALE:	
CHECKED:	NAT

SHEET

A2-0.01

3 LODGE PLAY LAWN AND OUTDOOR SEATING

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

LODGE - RENDERS

SHEET A2-0.02

Lodge Approach From Crosswalk - S

Lodge - City Walk - S

Lodge Approach From Zoo - E

Lodge Play Lawn Outdoor Seating - E

Event Entry and Back of House Building - S

Pavilions - S

Event Support Back of House - N

EVENT PAVILIONS
ARE ALTERNATES

Main Pavilion - N

Pavilions - N

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

LODGE - 3D VIEWS

SHEET SIZE: ARCH E (36" x 48")

DATE: 06 October 2023

SCALE:

CHECKED: NAT

SHEET:

A2-0.11

01 - LODGE - FLOOR PLAN

SH|R Studios
750 Madison Way B E #720
Bainbridge Island, WA 98110
phone (206) 842 8312
shrstudios.com

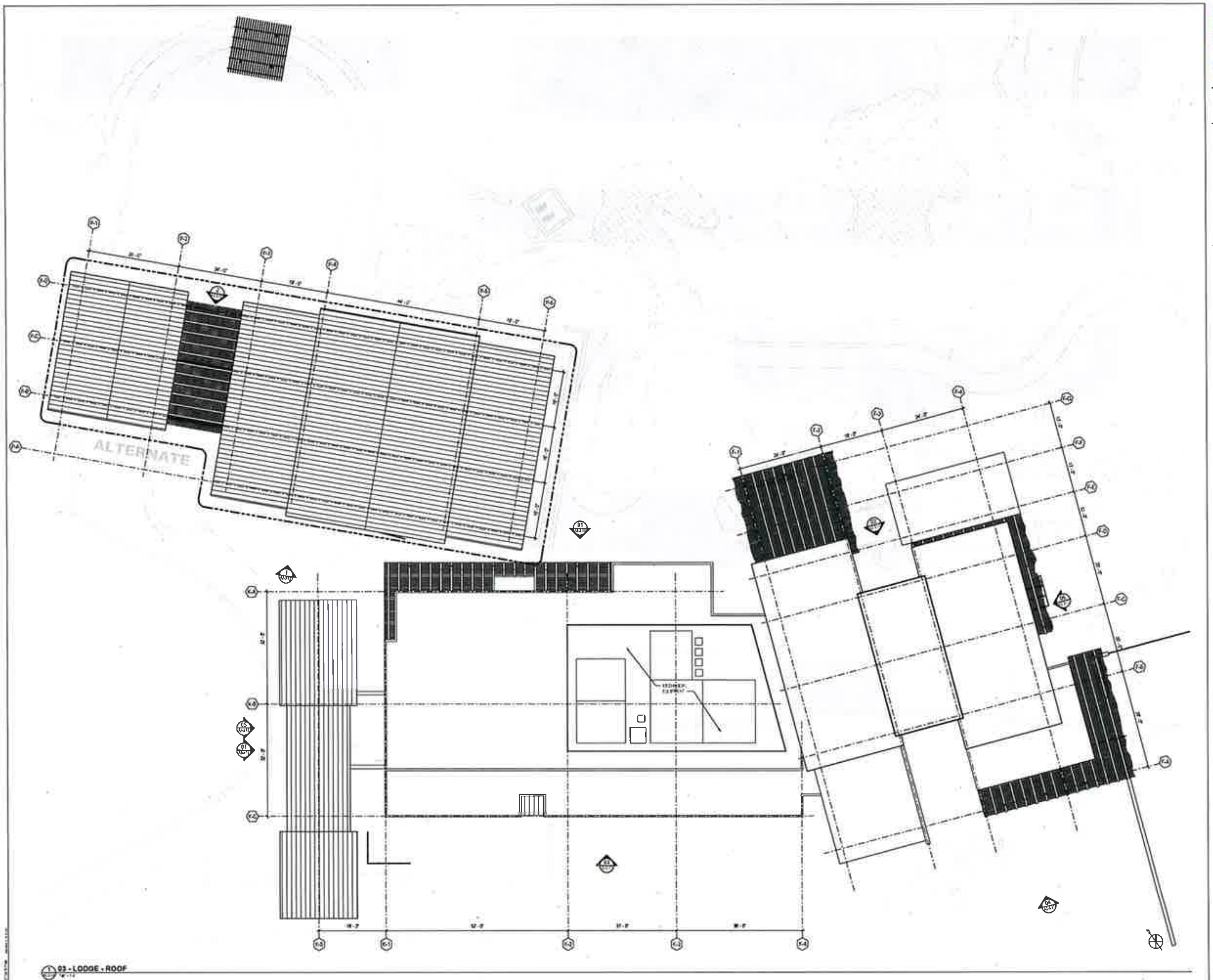
NOLL & TAM ARCHITECTS
729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

LODGE - FLOOR PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2023
SCALE	1/8" = 1'-0"
CHECKED	NAT
SHEET	A2-2.31



SAC ZOO

SH|R Studios

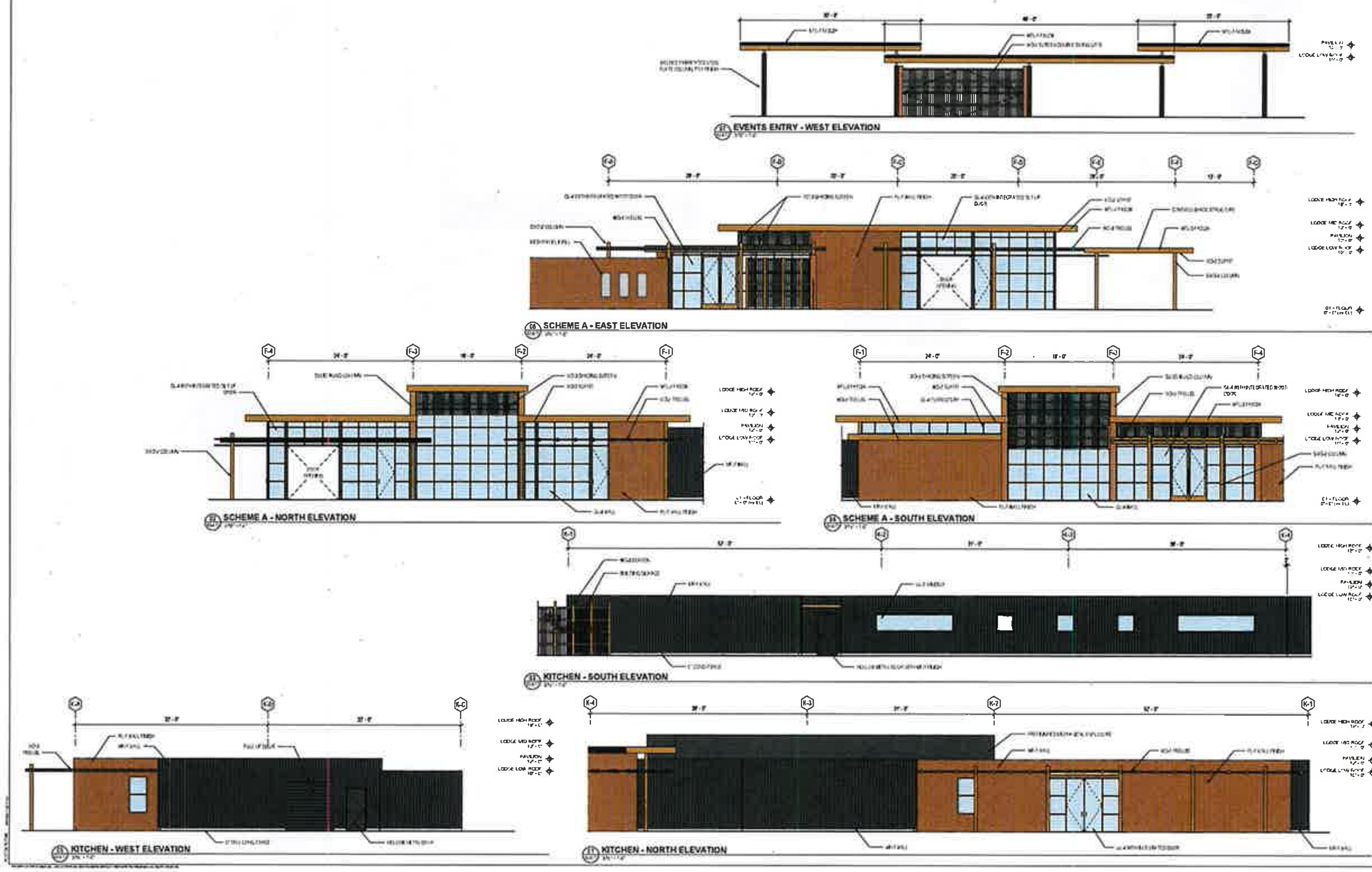
NOLL & TAM ARCHITECTS
729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

LODGE - ROOF PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	05 October 2023
SCALE	1/8" = 1'-0"
CHECKED	NA1
SHEET	A2-2.33



SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

728 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2700
fax 510.542.2201

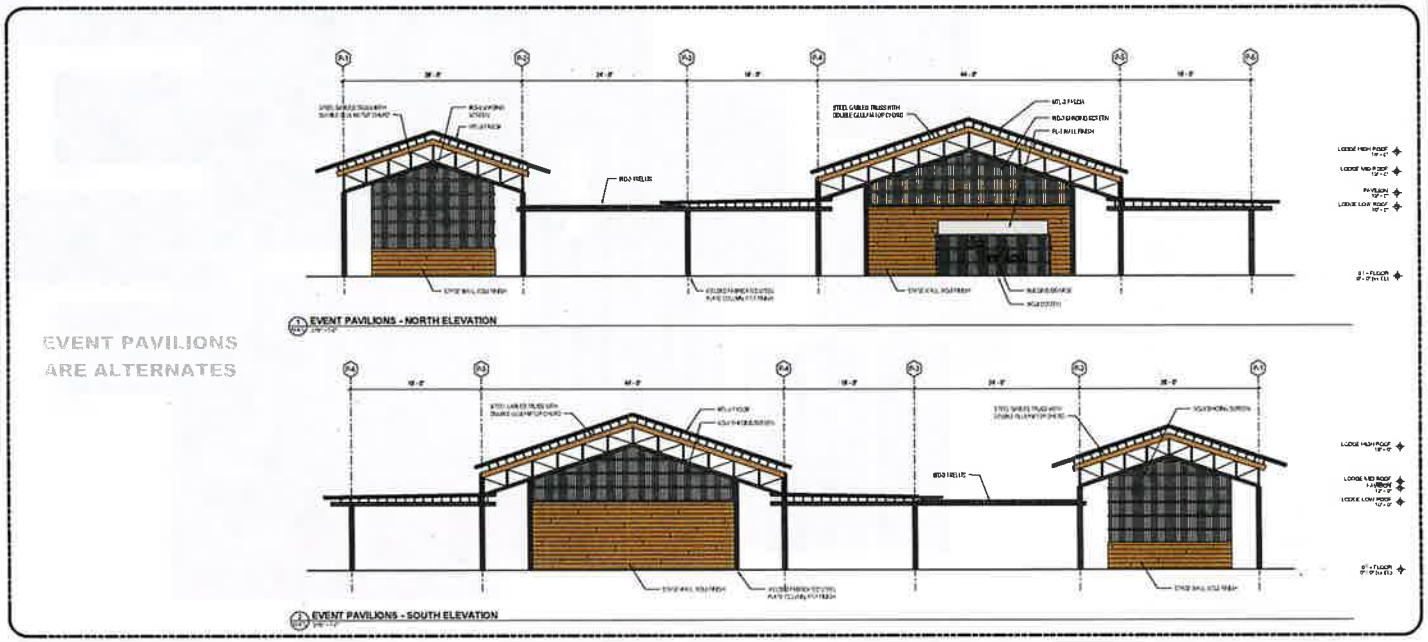
REV	DATE	DESCRIPTION

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

LODGE - EXTERIOR ELEVATIONS

SHEET SIZE:	ARCH E (36" x 48")
DATE	08 October 2023
SCALE	3/16" = 1'-0"
CHECKED	NAT
SHEET	A2-3.11



EVENT PAVILIONS
ARE ALTERNATES

SAC ZOO

shlr studios

NOLL & TAM ARCHITECTS

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

EVENT PAVILIONS - EXTERIOR ELEVATIONS

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	3/16" = 1'-0"
CHECKED	NAT

SHEET:

A2-3.12

EXTERIOR FINISH LEGEND

METAL

MP-1 CORRUGATED METAL PANEL, FACTORY FINISHED
MP-2 DECORATIVE CUSTOM LASER CUT METAL PANEL, FACTORY FINISHED

MTL-1 PREFINISHED ALUMINUM SHEET METAL, COLOR 1 (CHARCOAL)
MTL-2 SPECIALTY FINISH METAL, PATINA FINISH OVER GALVANIZED METAL
MTL-3 PREFINISHED ALUMINUM SHEET METAL, COLOR 2 (BRONZE)

WOOD

WD-1 EXTERIOR PREMANUFACTURED PANELIZED WOOD CEILING - STAIN 1
WD-2 EXTERIOR PREMANUFACTURED PANELIZED WOOD CEILING - STAIN 2
WD-3 EXTERIOR EUCALYPTUS POLE

SWD-1 SOLID WOOD - STAIN 1
SWD-2 SOLID WOOD - STAIN 2

COMPOSITE DECKING

CS-1 [illegible]

CERAMIC WALL TILE

CWT-1 EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 1
CWT-2 EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 2
CWT-3 EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 3

PLASTER

PL-1 [illegible]

PAINT

PT-1 FACTORY APPLIED PVDF COATING, COLOR TO MATCH MP-1
PT-2 EXTERIOR METAL FINISH, COLOR TO MATCH MP-1

GLAZING

GL-1 [illegible]
GL-2 [illegible]
GL-3 [illegible]
GL-4 [illegible]
GL-5 [illegible]

CONCRETE

CONC-1 EXPOSED EXTERIOR CONCRETE CURB
CMU-1 SPLIT FACE CMU

SAC ZOO

SH|R STUDIOS

NOLL & TAM ARCHITECTS
729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

LODGE - EXTERIOR FINISH LEGEND

SHEET SIZE:	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1/8" = 1'-0"
CHECKED:	N&T
SHEET	A2-9.11

1 Gelada Cafe

2 Gelada Cafe and Animal Care Center

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

GELADA/ANIMAL CARE - RENDERS

SHEET SIZE ARCH E (36" x 48")
DATE
SCALE
CHECKED
SHEET

A3-0.01

1 ANIMAL CARE VIEWING PLATFORM

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

729 Heinz Avenue
Berkeley, CA 94710

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

GELADA/ANIMAL CARE - RENDERS

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2022
SCALE	
CHECKED	NAT
SHEET	

A3-0.02

Gelada Cafe - SW

Gelada Cafe - NW

Animal Care Center - W

Animal Care Center - NW

Animal Care Center - NE

Animal Holding - SE

Commissarry - SE

NOLL & TAM ARCHITECTS

729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

GELADA/ANIMAL CARE - 3D VIEWS

SHEET SIZE.	ARCH E (36" x 48")
DATE.	05 October 2023
SCALE:	
CHECKED:	NAT
SHEET.	

A3-0.11

01 - ANIMAL CARE - FLOOR PLAN

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

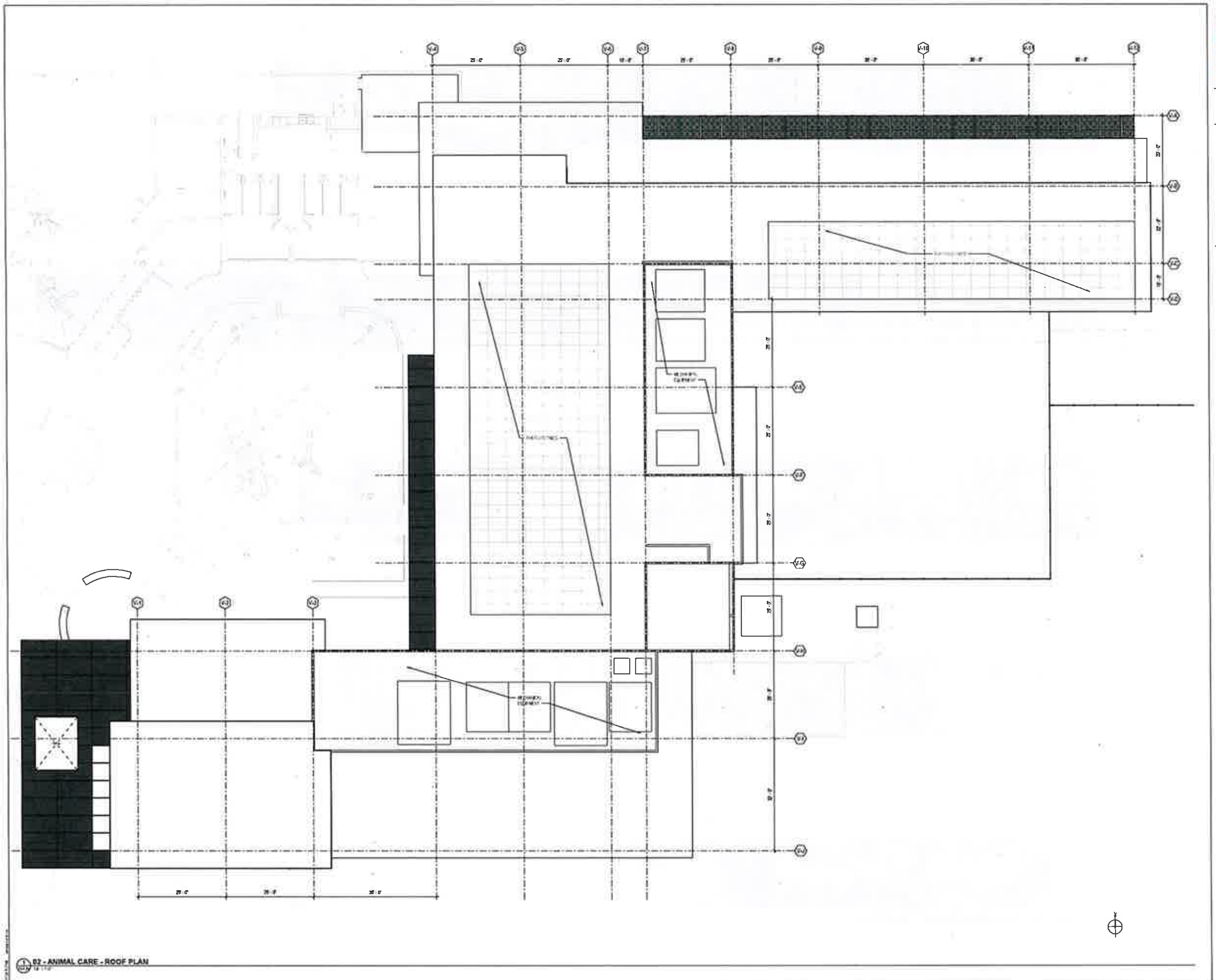
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

GELADA/ANIMAL CARE - FLOOR PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1/8" = 1'-0"
CHECKED	NAT
SHEET	A3-2.31



SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
fax 510.542.2201

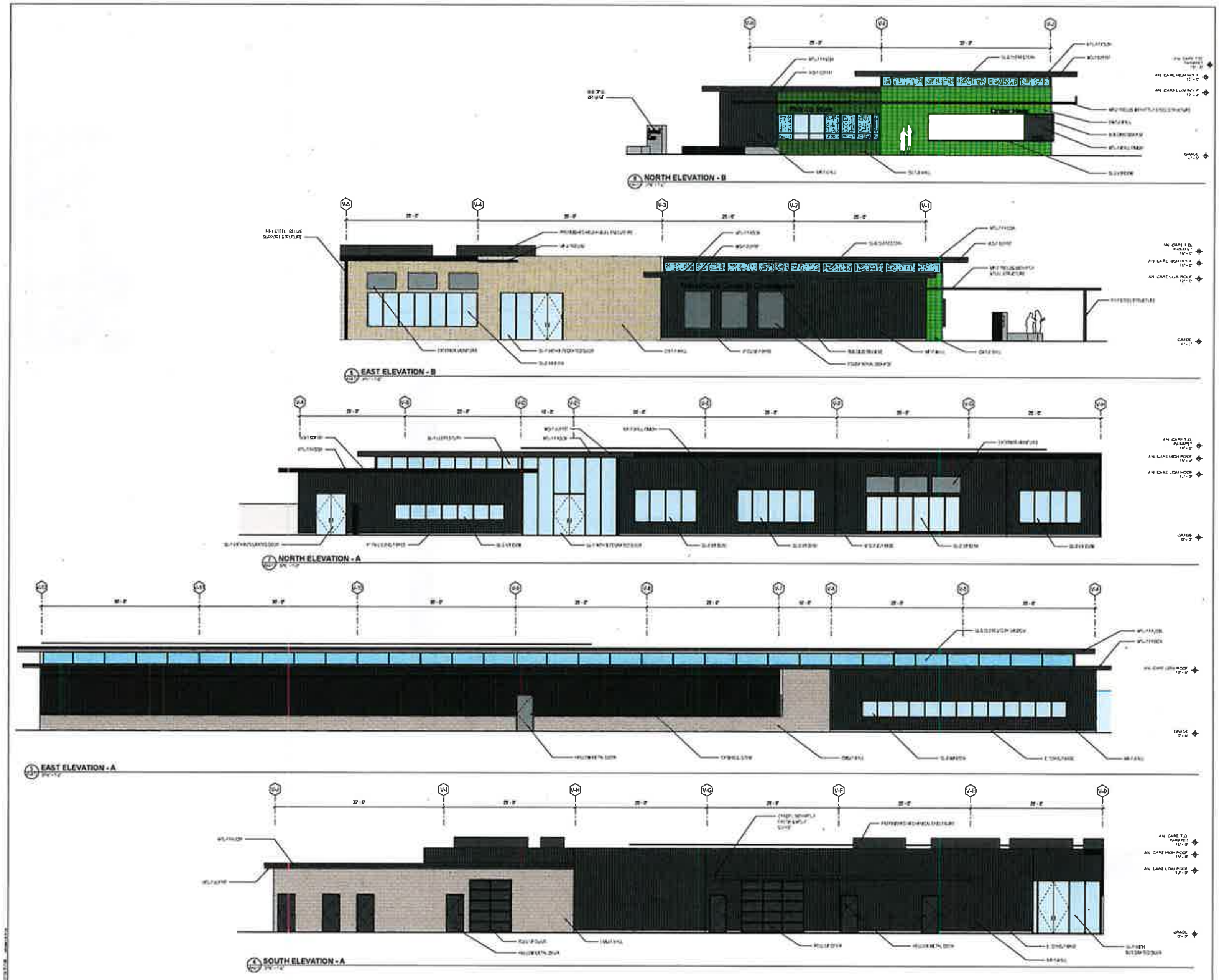
REV DATE DESCRIPTION

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

GELADA/ANIMAL CARE - ROOF PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	1/8" = 1'-0"
CHECKED	NAT
SHEET	A3-2.33



SH|R Studios

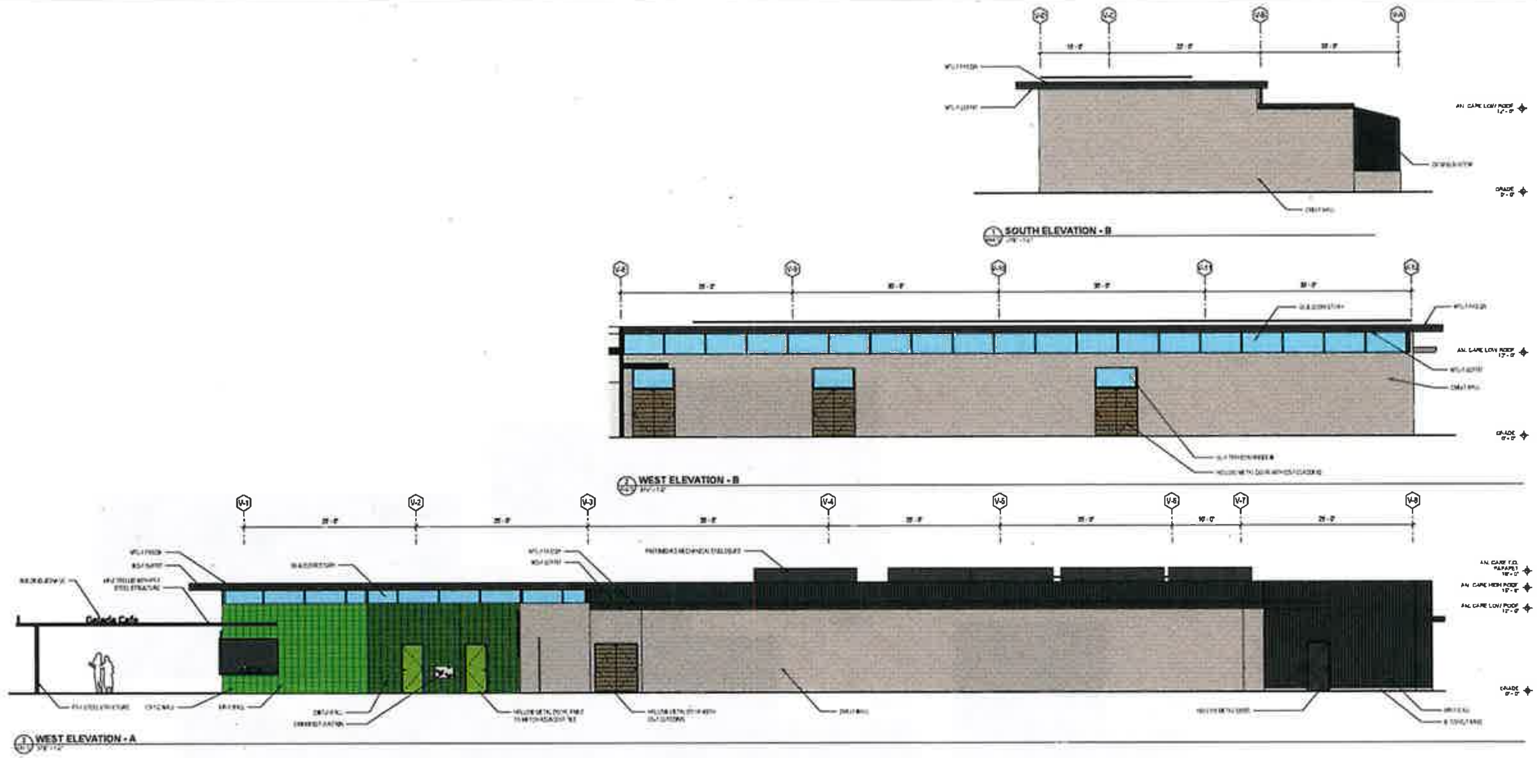
NOLL & TAM ARCHITECTS

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

GELADA/ANIMAL CARE - EXTERIOR ELEVATIONS

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	3/16" = 1'-0"
CHECKED	N&T
SHEET	A3-3.11



SOUTH ELEVATION - B

WEST ELEVATION - B

WEST ELEVATION - A

SAC ZOO

SH/R Studios

NOLL & TAM ARCHITECTS

729 Heinz Avenue
Berkeley, CA 94710
tel 510.542.2200
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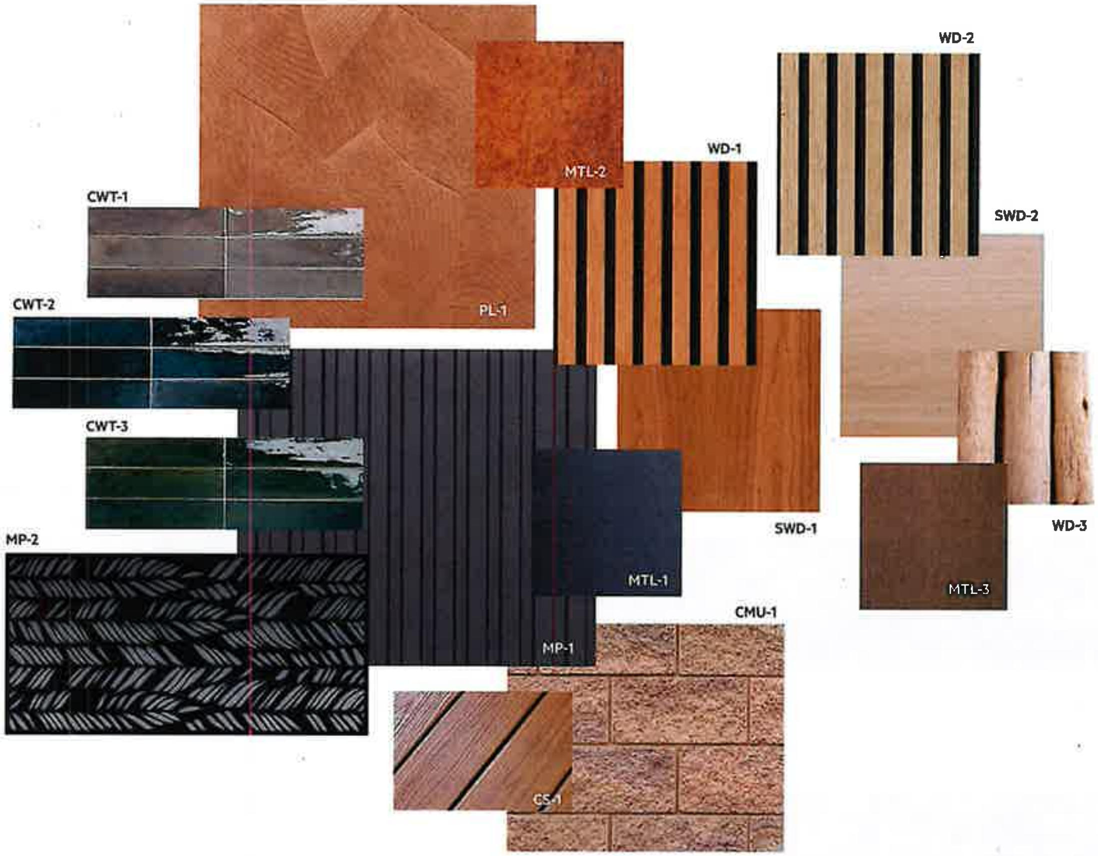
NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

GELADA/ANIMAL CARE - EXTERIOR ELEVATIONS

SHEET SIZE: ARCH E (36" x 48")
DATE: 06 October 2023
SCALE: 3/16" = 1'-0"
CHECKED: N&T
SHEET:

A3-3.12



EXTERIOR FINISH LEGEND

METAL

MP-1 CORRUGATED METAL PANEL, FACTORY FINISHED
MP-2 DECORATIVE CUSTOM LASER CUT METAL PANEL, FACTORY FINISHED

MTL-1 PREFINISHED ALUMINUM SHEET METAL, COLOR 1 (CHARCOAL)
MTL-2 SPECIALTY FINISH METAL, PATINA FINISH OVER GALVANIZED METAL
MTL-3 PREFINISHED ALUMINUM SHEET METAL, COLOR 2 (BRONZE)

WOOD

WD-1 EXTERIOR PREMANUFACTURED PANELIZED WOOD CEILING - STAIN 1
WD-2 EXTERIOR PREMANUFACTURED PANELIZED WOOD CEILING - STAIN 2
WD-3 EXTERIOR EUCALYPTUS POLE

SWD-1 SOLID WOOD - STAIN 1
SWD-2 SOLID WOOD - STAIN 2

COMPOSITE DECKING

CS-1 [illegible]

CERAMIC WALL TILE

CWT-1 EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 1
CWT-2 EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 2
CWT-3 EXTERIOR GLAZED CERAMIC WALL TILE - COLOR 3

PLASTER

PL-1 EXTERIOR PLASTER, INTEGRAL COLOR, COMBED FINISH

PAINT

PT-1 FACTORY APPLIED PVDF COATING, COLOR TO MATCH MP-1
PT-2 EXTERIOR METAL FINISH, COLOR TO MATCH MP-1

GLAZING

GL-1 ALUMINUM STOREFRONT SYSTEM, CHARCOAL GREY MULLION
GL-2 ALUMINUM FRAMED WINDOW WITH DEEP FRAME PROFILE, OPERABLE PANES AS INDICATED
GL-3 ALUMINUM SUPPORTED DOUBLE HEIGHT STOREFRONT SYSTEM WITH CERAMIC FRIT ON GLAZING
GL-4 ALUMINUM STOREFRONT SYSTEM BUTT GLAZED, SQUARE PANES
GL-5 ALUMINUM STOREFRONT SYSTEM WITH TRANSLUCENT GLAZING WATER PATTERN

CONCRETE

CONC-1 EXPOSED EXTERIOR CONCRETE CURB
CMU-1 SPLIT FACE CMU

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The New Zoo at Elk Grove

GELADA/ANIMAL CARE - EXTERIOR FINISH LEGEND

SHEET SIZE: ARCH E (36" x 48")
DATE: 08 October 2022
SCALE: 1/8" = 1'-0"
CHECKED: NAT
SHEET:

A3-9.11

EXHIBIT C5

Sheet List

Sheet Count	Sheet Number	Sheet Name
1	LS001	SHEET INDEX, SYMBOLS, ABBREVIATIONS AND NOTES
2	LS002	EQUIPMENT SCHEDULES
3	LS-SAV-P01	SAVANNA HABITAT - PROCESS FLOW DIAGRAM
4	LS-FLA-P01	FLAMINGO - PROCESS FLOW DIAGRAM
5	LS-ALL-P01	SELVA - PROCESS FLOW DIAGRAM
6	LS-ALL-P01	ALLIGATOR - PROCESS FLOW DIAGRAM
7	LS101	LSS SITE PLAN
8	LS201	ENLARGED LSS PLAN
9	LS202	ENLARGED LSS PLAN
10	LS203	ENLARGED LSS PLAN
11	LS204	ENLARGED LSS PLAN
12	LS205	ENLARGED LSS PLAN

DRAWING SYMBOLS

PIPE CONTINUATION

PIPE CONTINUATION (IN SECTION)
PIPE RISE (IN PLAN VIEW)

PIPE TERMINATION WITH/IN EXTENTS (SECTION
PIPE DROP (IN PLAN VIEW)

SLOPE PIPE CONTINUATION

POINT OF CONNECTION (P.O.C.)

MONITORING / CONTROL IDENTIFICATION

PROCESS VARIABLE (FIRST LETTER/S) → TYPE OF INSTRUMENT (SUCCEEDING LETTERS)

LOCAL MOUNTED INSTRUMENT

CONTROLS LOCAL OF AUTOMATED SYSTEM

PROCESS VARIABLE / TYPE OF INSTRUMENT

PROCESS VARIABLE		TYPE OF INSTRUMENT	
ACID	AC	CONTROLLER	C
BACKWASH	BW	SENSOR	S
CHLORINE	CL	GAUGE	G
COMPOUND (OR) / FOAM	C	MONITOR	M
DEPARTURE	DP	TEST POINT	P
FLOW	F	SWITCH	S
DRUM FILTER	FD	TRANSDUCER	T
LEVEL	L	SENSING WELL	W
OXIDATION REDUCTION POTENTIAL	ORP		
PARTICULATE	PA		
PRESSURE	P		
TEMPERATURE	T		
WATER QUALITY	WQ		

INTERFACE SYMBOLS

PROCESS INTERFACE WITHIN LSS SUPPORT SYSTEM

CONTROL INTERFACE WITHIN THE LSS SUPPORT SYSTEM

INTERFACE TAG

CONTINUATION (RAW/BOILER)

EXTERNAL INTERFACE TO/OR FROM LSS SUPPORT SYSTEM

SEISMIC CERTIFICATION

LSS NON-BUILDING STRUCTURES AND/OR NON-STRUCTURAL COMPONENTS SHALL BE DESIGNED, SUPPORTED AND ANCHORED AS INDICATED IN THE INTERNATIONAL BUILDING CODE, ASCE 7. CONTRACT DOCUMENTS OR BY BUILDING OFFICIAL FOR SEISMIC DESIGN CATEGORY ___ thru ___ and Sᴅ1 = ___ FOR GENERAL MECHANICAL AND HYDRAULIC EQUIPMENT UNDER OCCUPANCY CATEGORY II USE IMPORTANCE FACTOR = 1.0. FOR SPECIAL OZONE GAS GENERATION AND CHEMICAL STORAGE EQUIPMENT UNDER OCCUPANCY CATEGORY IV USE IMPORTANCE FACTOR = 1.5.

FOR ALL LSS EQUIPMENT WITH AN OPERATING WEIGHT GREATER THAN 400lbs. THE CONTRACTOR SHALL SUBMIT DOCUMENTATION FROM THE MANUFACTURER THAT THE EQUIPMENT IS CAPABLE OF WITHSTANDING DESIGN SEISMIC LATERAL FORCES BASED ON THE ABOVE REQUIREMENTS. PROVIDE ANCHORAGE OF COMPONENTS IN ACCORDANCE WITH THE INTERNATIONAL BUILDING CODE AND ASCE 7.

EQUIPMENT DESIGNATION

SERVICE → COMPONENT ID (XX-XXX-XX-XXX) → ID NUMBER → SERIES NUMBER

EXAMPLE: SERVICE → PUMP/FILTER → ABOVE/BELOW → PUMP/FD → SERIES NUMBER

PIPE IDENTIFICATION

PROCESS FLUID → LINE MATERIAL (XXX-XXX-XX) → LINE SIZE

EXAMPLE: SALTWATER RETURN → SWR-PVC-12 → POLYVINYL CHLORIDE → PIPE SIZE

PROCESS FLUID IDENTIFICATION

AC	ACID
AIR	BLOWER AIR
BRN	BRINE
BWD	BACKWASH DRAIN
BWR	BACKWASH RECOVERY
BWS	BACKWASH SUPPLY
BYP	BYPASS
CA	COMPRESSED AIR
CFL	CHEMICAL FILL
CHL	CHILLER
CL	CHLORINE
CND	CONDENSATE
CW	CHILLED WATER
DRN	DRAIN
EQ	EQUALIZER
FBG	BAG FILTER
FCR	CARTRIDGE FILTER
FDN	DEMINERALIZATION FILTER
FSH	FLUSH
FRC	FRACTIONATOR
FWBWD	FRESHWATER BACKWASH DRAIN
FWBWS	FRESHWATER BACKWASH SUPPLY
FWM	FRESHWATER MAKEUP
FWR	FRESHWATER RETURN
FWS	FRESHWATER SUPPLY
HEX	HEAT EXCHANGER
HTR	HEATER
HPWS	HIGH POTABLE WATER SUPPLY
OF	OVERFLOW
OFD	OZONE OFFGAS
OZO	OZONE GAS
OZW	OZONATED WATER
PDI	POTABLE WATER
PSK	PROTEIN SKIMMER
REC	RECIRCULATION
RET	RETURN
RSW	RAW SEAWATER
RSWMU	RECOVERED SALTWATER MAKEUP
RSWR	RECOVERY SALTWATER RETURN
RSWS	RECOVERY SALTWATER SUPPLY
SMP	SAMPLE
SMT	SPARE MIXING TANK
SWBWD	SALTWATER BACKWASH DRAIN
SWBWS	SALTWATER BACKWASH SUPPLY
SWI	SEAWATER INTAKE
SWMU	SALTWATER MAKEUP
SWR	SALTWATER RETURN
SWS	SALTWATER SUPPLY
UVS	ULTRAVIOLET STERILIZER
VAC	VACUUM
VNT	VENT
WFS	WATERFALL SUPPLY

COMPONENT IDENTIFICATION

AB	AIR BLOWER
BLV	BALL VALVE - MANUAL
BLVM	BALL VALVE - MOTORIZED
BVD	BUTTERFLY VALVE - MANUAL
BVM	BUTTERFLY VALVE - MOTORIZED
CHC	CHEMICAL CONTROL
CHL	CHILLER
CLC	CHEMICAL CONTROL
CLGN	CHLORINE GENERATOR
CLTF	CHLORINE TABLET FEEDER
CR	CALCIUM REACTOR
DCA	DECALCIFIER TOWER
DPM	DRAW POINT MONITORING
DVM	DRAIN RAIN VALVE - MOTORIZED
FBD	FILTER - BAG
FBV	FILTER - BEAD (VERTICAL)
FCRT	FILTER - CARTRIDGE (VERTICAL)
FCV	FILTER - CARBON (VERTICAL)
FDN	FILTER - DEMITIFICATION (VERTICAL)
FDR	FILTER - DRUM
FLM	FLOW MONITOR (M)
FRC	FRACTIONATOR
FSH	FILTER - SAND (HORIZONTAL)
FSV	FILTER - SAND (VERTICAL)
FSW	FLOW SWITCH
HEX	HEAT EXCHANGER
HTR	HEATER
LM	LEVEL MONITORING (ULTRA SONIC)
LMP	LEVEL MONITORING (PRESSURE)
LSW	LEVEL SWITCH
OFRC	OZONE FRACTIONATOR
OAPC	ORP CONTROLLER
ORPM	ORP MONITORING
OXM	OXYGEN MONITORING
OZAC	OZONE - AIR COMPRESSOR
OZAM	OZONE - AMBIENT MONITOR
OZAR	OZONE - AIR RECEIVER
OZAS	OZONE - AIR PREPARATION SKID
OZBD	OZONE - BACKFLOW PREVENTION DEVICE
OZCH	OZONE - CLOSED LOOP CHILLER
OZCM	OZONE - CONDENSATE MANAGEMENT SYSTEM
OZCP	OZONE - INTERFACE CONTROL PANEL
OZES	OZONE - CONTACTOR SKID
OZCV	OZONE - CONTACT VESSEL
OZDD	OZONE - DESICCANT DRYER
OZDS	OZONE - DISSASSER
OZDM	OZONE - DISSOLVER
OZES	OZONE - EQUIPMENT SKID
OZGN	OZONE - GENERATOR
OZMX	OZONE - GAS MIXER
OZOC	OZONE - OFFGAS CONCENTRATOR
OZOD	OZONE - OFFGAS DESTRUCT
OZOR	OZONE - OXYGEN REACTOR
OZRD	OZONE - REFRIGERANT DRYER
OZWA	OZONE - EXTERNAL WARNING ALARM
PCHL	PUMP - CHILLER
PCHM	PUMP - CHEMICAL
PDNT	PUMP - DENITRIFICATION
PFBG	PUMP - FILTER BAG
PFIL	PUMP - FILTER
PFRC	PUMP - FRACTIONATOR
PHTX	PUMP - HEAT EXCHANGER
PINJ	PUMP - INJECTION
PPSK	PUMP - PROTEIN SKIMMER
PRCR	PUMP - RECIRCULATION
PSCR	PUMP - STATIC SCREEN
PSK	PROTEIN SKIMMER
PTRN	PUMP - TRANSFER
PVAC	PUMP - VACUUM
PWF	PUMP - WATERFALL
ROS	REVERSE OSMOSIS
SCV	SCREW CONVEYOR
SDR	SCREEN - DRUM
SIC	SCREEN - SIDE CHANNEL
SPS	SUMP PUMP STATION
SST	SCREEN - STATIC
TFER	TABLET FEEDER - BROMINE
TFCL	TABLET FEEDER - CHLORINE
TM	TEMPERATURE MONITORING
TSW	TEMPERATURE SWITCH
TSN	TANK
UVS	ULTRAVIOLET STERILIZER
WQM	WATER QUALITY MONITORING
WS	WATER SOFTENER

SYMBOLS

PRESSURE RELIEF VALVE

AIR RELIEF VALVE

BALL VALVE

BUTTERFLY VALVE

NEEDLE VALVE

FLOW OR PRESSURE REGULATING VALVE (AS NOTED)

RATE VERSUS OR DRAWDOWN VALVE (AS NOTED)

GLOBE VALVE

CHECK VALVE

CHANGE IN PIPE MATERIAL

VENTURI INJECTOR

WET TAP

END CAP

THREADED CONNECTION END CAP

ELECTRIC MOTOR WITH ACS INTERFACE

SINGLE ARCH FLEXIBLE COUPLING

FLEXIBLE COUPLING

FLEXIBLE REDUCER COUPLING

FLOOR DRAIN

ORIFICE PLATE

PIPE SUPPORT

REDUCER COUPLING OR REDUCER BUSHING

SOLENOID VALVE

STRAINER

UNION

ULTRA SONIC

QUICK DISCONNECT (WALL MOUNT OR CHEMICAL REMOVER)

VERTICAL FILTER OR OTHER VESSEL

CENTRIFUGAL (DRY PIT) PUMP

SUBMERSIBLE PUMP

P.O.C. (POINT OF CONNECTION)

GENERAL NOTES

1. VERIFY SIZE AND LOCATION OF EXISTING OR OTHER DISCIPLINE'S UTILITIES AT ANY PIPE CROSSINGS OR CONNECTIONS PRIOR TO CONSTRUCTION.
2. MINIMUM COVER FOR ALL NEW BURIED PIPING SHALL BE 3'-FEET UNLESS SHOWN OTHERWISE.
3. ALL EXPOSED PIPING SHALL BE ADEQUATELY SUPPORTED TO AVOID LIE, CYLINDER SAG OR DEFLECTION.
4. ALL EQUIPMENT, MATERIALS, CONSTRUCTION AND LABOR SHALL COMPLY WITH THE REQUIREMENTS OF ALL APPLICABLE LAWS, REGULATIONS AND CODES INCLUDING SAFETY AND HEALTH.
5. VERIFY WITH SHOP DRAWINGS, THE SIZES OF ALL EQUIPMENT AND MOUNTING REQUIREMENTS PRIOR TO CONSTRUCTING BASES, WALLS, FOUNDATIONS, ETC., COORDINATE EQUIPMENT PADS WITH STRUCTURAL DRAWINGS.
6. ALL PIPE PENETRATIONS AT NEW CONCRETE HYDRAULIC STRUCTURES SHALL HAVE WALL FLANGES. BLOCK-OUTS FOR PIPE PENETRATIONS SHALL NOT BE ALLOWED.
7. CONNECTIONS BETWEEN DISSIMILAR MATERIALS SHALL BE COMPATIBLE IN ALL WAYS.
8. WHERE NO CONSTRUCTION DETAILS ARE SHOWN OR NOTED FOR ANY PART OF THE WORK, SUCH DETAILS SHALL BE THE SAME AS FOR SIMILAR WORK SHOWN AS THE DRAWINGS.
9. ALL APPLICABLE EQUIPMENT AND PIPING SHALL BE TESTED IN CONFORMANCE WITH LOCAL BUILDING AND PLUMBING CODES AND REGULATIONS.
10. ALL SYSTEM PIPING SHALL BE TESTED TO A PRESSURE OF 150 PSI FOR 2 HOURS WITH NO LEAKAGE. THE ALLOWABLE LEAKAGE SHALL BE ZERO GALLONS. PIPE TESTING SHALL PRECEDE THE FILLING OF STRUCTURE AND EXPOSED WITH WATER.
11. UNLESS SHOWN OR APPROVED OTHERWISE, PIPE RUNS SHALL BE SLOPED IN ONE DIRECTION ONLY. HIGHEST POINT OR CONTINUOUS EVERY RUN ARE SHOWN. PIPE SLOPE SHALL BE UNIFORM BETWEEN POINTS.
12. MANY OPERATING PARAMETERS, SUCH AS TEMPERATURE, ORP AND FLOW RATES SHALL BE DETERMINED BY THE OWNER'S OPERATIONAL STAFF. SPECIFICATION VALUES ISOLATED ON PAID DRAWINGS ARE STARTING POINT VALUES.
13. CONTRACTOR SHALL EVALUATE EACH PIPE CONSIDERATION AND SPAN AND PROVIDE SUPPORTS AND BRACING PER LSS SPECIFICATIONS.

ABBREVIATIONS

A.C.S.	AUTOMATED CONTROL SYSTEM	EA.	EACH WAY	LS	LIFE SUPPORT	REV	REVISION
A.F.F.	ABOVE FINISHED FLOOR	EXIST.	EXISTING	LSS	LIFE SUPPORT SYSTEM	RPM	REVOLUTIONS PER MINUTE
ALUM	ALUMINUM	EXP.	EXPANSION	LST	LOWEST ACTUABLE PVC		
AVG	AVERAGE	F	DEGREES FAHRENHEIT			SCH.	SCHEDULE
		FCV	FLOW CONTROL VALVE	M	METERS	SCHED.	SCHEDULE
B.C.	BOLT CIRCLE	FD	FLOOR DRAIN	MM	MILLIMETERS	SHT	SHEET
BF	BLIND FLANGE	F.F.	FINISHED FLOOR	MAX.	MAXIMUM	SIM	SIMILAR
BFP	BACKFLOW PREVENTION	F.G.	FINISHED GRADE	MLV	MOTORIZED BALL VALVE	SPECS	SPECIFICATIONS
BFV	BUTTERFLY VALVE	FLG.	FLANGE	MFR.	MANUFACTURER	SQ	SQUARE
BHP	BRAKE HORSEPOWER	FLR.	FLOOR	MIN	MINIMUM	SQ FT	SQUARE FEET
BLDG	BUILDING	FRP	FIBERGLASS REINFORCED PLASTIC	MISC	MISCELLANEOUS	SQM	SQUARE METER
BLV	BALL VALVE	FRPV	FRP VACUUM RATED			SS	STAINLESS STEEL / SANITARY
BOP	BOTTOM OF PIPE (UTILITIES)	FRPVE	FRP VINYL-ESTER	NaOCl	SODIUM HYPOCHLORITE		SEWER
BTU	BRITISH THERMAL UNIT	FS	FLOW SWITCH	N.C.	NORMALLY CLOSED	STL	STEEL
BWR	BACKWASH RECOVERY	FSK	FLOW SKIN	N.O.	NORMALLY OPEN	STRUCT	STRUCTURAL
		FSW	FOOT OF WEST	NEC	NATIONAL		
CAP	COMPRESSED AIR PIPE	FTG	FOOTING	NEMA	FURNISHED	TBD	TO BE DETERMINED
CBM	CUBIC METER	FT/SEC.	FEET PER SECOND	N.T.S.	NOT TO SCALE	TDH	TOTAL DYNAMIC HEAD
CFM	CUBIC FEET PER MINUTE			NV	NEEDLE VALVE	TEMP	TEMPERATURE
CKV	CHECK VALVE	GA	GAUGE			TFE	TEFLON
CL	CENTERLINE	GAL	GALLON	O.C.	ON CENTER	THK	THICK
CLR	CLEAR	GP	GALLONS PUMP	O.D.	OUTSIDE DIAMETER	T.O.C.	TOP OF CURB
C.O.	CLEAN OUT	GPD	GALLONS PER DAY	O.F.	OUTSIDE FACE	T.O.P.	TOP OF PAVING / PAVEMENT
CONC	CONCRETE	GPM	GALLONS PER MINUTE	OF	OVERFLOW	T.O.S.	TOP OF SLAB
CONT	CONTINUOUS OR CONTINUED	GV	GATE VALVE	ORP	OXIDATION REDUCTION POTENTIAL	T.O.W.	TOP OF WALL
CPLG	COUPLING			OZ	OZONE	TYP.	TYPICAL
CPVC	CHLORINATED POLYVINYL CHLORIDE	HEX	HEAT EXCHANGER				
CRPVC	CORROSION RESISTANT POLYVINYL CHLORIDE	HORIZ	HORIZONTAL	PE	POLYETHYLENE	U.N.O.	UNLESS NOTED OTHERWISE
		HP	HORSEPOWER	PH	PHASE		
DSWRS	DISCHARGE SALTWATER RECOVERY BASIN	HR	HOUR	PH	HYDROGEN ION CONCENTRATION	V	VOLTS
DU	DISPOSAL UNIT	HS	HAND SWITCH	PIPE	PIPE POINT OF CONNECTION	VAR	VARIABLE
		HT	HEIGHT	PP	PETE'S PLUG	VERT	VERTICAL
D	DEPTH	ID	IDENTIFICATION	PPM	PARTS PER MILLION	VOL	VOLUME
DGO	DEGREE	I.D.	INSIDE DIAMETER	PRV	PRESSURE RELIEF VALVE		
DIA	DIAMETER	I.E.	INVERT ELEVATION	PCV	PRESSURE CONTROL VALVE	W	WATTS OR WIDTH
DRN	DRAIN	I.F.	INSIDE FACE	PS	PIPE SUPPORT	W	WITH
DSWRS	DIRTY SALTWATER RECOVERY BASIN	IN.	INCH	PSI	POUNDS PER SQUARE INCH	WF	WALL FLANGE
DWG	DRAWINGS	IND	INDICATOR	PVC	POLYVINYL CHLORIDE	W.L.	WATER LEVEL
		INJ	INJECTION	PVDF	POLYVINYLIDENE FLUORIDE	WS	WATER STOP
EA.	EACH	INV	INVERT	P & ID	PIPING AND INSTRUMENTATION DIAGRAM	WT.	WEIGHT
EC	EXCENTRIC					WW	WEDGE VALVE
EFF	EFFICIENCY	JT	JOINT				
EL	ELEVATION			QTY	QUANTITY	#	POUND/NUMBER
ELEC	ELECTRICAL	kW	KILOWATTS			@	CENTER LINE
ELL	ELBOW	kG	KILOGRAMS	R	RADIUS	Ø	DIAMETER
ENCSD	ENCASED			RED	REDUCER	45	45°
EQL	EQUAL	L	LENGTH	REF	REFERENCE	90	90 DEGREE
EQUIP	EQUIPMENT	LBS	POUNDS	REQ'D	REQUIRED	∠	ANGLE
				RET	RETAINING		

LINE LEGEND

PIPING AND INSTRUMENTATION DIAGRAMS

PROCESS

CONTROL SIGNAL

HEATED TRACE

PLAN DRAWINGS

ABOVE GROUND

UNDERGROUND PIPING

CENTER LINES

MATCHLINES

DRAWING CONVENTIONS

DETAIL CALLOUT: DETAIL NUMBER → DRAWING NUMBER WHERE SHOWN

VIEW REFERENCE: VIEW → SHEET

PHOTO REFERENCE: PHOTO NUMBER → DRAWING NUMBER WHERE SHOWN

SECTION MARK: SECTION NUMBER → DRAWING NUMBER WHERE SHOWN

CUSTOM PIPE FITTING SYMBOL

PIPE MATERIAL → XX-XX → PIPE DIAMETER

ANGLE OF FITTING

NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
1	10.27.2023	For Review
2	12.08.2023	For Pricing

The New Zoo at Elk Grove

SHEET INDEX, SYMBOLS, ABBREVIATIONS AND NOTES

SHEET SIZE	ARCH E (36" x 48")
DATE	06 October 2023
SCALE	12" = 1'-0"
CHECKED	JBF
SHEET	LS001

Schematic Plans

PUMP SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	FLOW (GPM)	[illegible]	OPERATION	[illegible]	MATERIAL	TYPE	SIZE	MINIMUM EFFICIENCY (%)	ELECTRICAL (MOTOR) HP	RPM	VOLTS	PHASE	HERTZ	DRIVE (VFD)	REMARKS	SPECIFICATION
SAV-PTRN01-001 AND -002	SAVANNA EXHIBIT / TRANSFER PUMP	[illegible]	[illegible]	[illegible]	N/A	N/A	[illegible]	SUBMERSIBLE			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible] / MINIMUM 3" SOLIDS PASSED / PROVIDE CONTROLLER FOR EACH PUMP INCLUDING SHUT OFF FOR OVER HEATING OR LOW WATER CONDITION AND ALARM FOR SEAL FAILURE / LISTED POWER TO CONTROLLER / PROVIDE 300 SERIES STAINLESS STEEL GUIDE RAIL SYSTEM / PROVIDE CONDUIT AND WIRING BETWEEN PUMP AND CONTROLLER	[illegible]
FLA-PTRN01-001 AND -002	FLAMINGO EXHIBIT / TRANSFER PUMP	[illegible]	[illegible]	[illegible]	N/A	N/A	DUCTILE IRON	SUBMERSIBLE			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible] / MINIMUM 3" SOLIDS PASSED / PROVIDE CONTROLLER FOR EACH PUMP INCLUDING SHUT OFF FOR OVER HEATING OR LOW WATER CONDITION AND ALARM FOR SEAL FAILURE / LISTED POWER TO CONTROLLER / PROVIDE 300 SERIES STAINLESS STEEL GUIDE RAIL SYSTEM / PROVIDE CONDUIT AND WIRING BETWEEN PUMP AND CONTROLLER	[illegible]
FLA-P[illegible]	FLAMINGO EXHIBIT / SAND FILTER PUMP	1	125	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	PACO LC OR EQUAL	[illegible]
GEL-PTRN01-001 AND -002	GELADA EXHIBIT / TRANSFER PUMP	[illegible]	400	[illegible]	N/A	N/A	[illegible]	[illegible]			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible] / MINIMUM 3" SOLIDS PASSED / PROVIDE CONTROLLER FOR EACH PUMP INCLUDING SHUT OFF FOR OVER HEATING OR LOW WATER CONDITION AND ALARM FOR SEAL FAILURE / LISTED POWER TO CONTROLLER / PROVIDE 300 SERIES STAINLESS STEEL GUIDE RAIL SYSTEM / PROVIDE CONDUIT AND WIRING BETWEEN PUMP AND CONTROLLER	[illegible]
[illegible]	[illegible]	[illegible]	400	[illegible]	N/A	N/A	DUCTILE IRON	SUBMERSIBLE			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
ALL-PTRN01-001 AND -002	[illegible]	[illegible]	300	[illegible]	N/A	N/A	[illegible]	SUBMERSIBLE			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
ALL-P[illegible]-001	[illegible]	1	[illegible]	[illegible]	N/A	N/A	[illegible]	[illegible]			[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	PACO LC OR EQUAL	[illegible]

FILTER SCHEDULE

DESIGNATION	SERVICE/FUNCTION	QTY	SIZE	FLOW (GPM)	OPERATION	MEDIA	MATERIAL	ELECTRICAL COMPONENT	HP	VOLTS	PHASE	HERTZ	REMARKS	SPECIFICATION
SAV-FDRM01-001 AND -002	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible] CONTROL MODULE	7.8 AMPS MAX	115-120	1	60	[illegible]	[illegible]
								DRUM MOTOR / VFD	0.75 KW	480	3	60		
								RINSE PUMP / [illegible] STARTER	3 KW	480	3	60		
FLA-FDRM01-001 AND -002	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	BACKWASH CONTROL MODULE	7.8 AMPS MAX	115-120	1	60	[illegible] COMPONENTS / BACKWASH CONTROLLER PRE-WIRED TO ULTRASONIC LEVEL SENSOR WITH 16 FT CABLE	[illegible]
								DRUM MOTOR / VFD	0.75 KW	480	3	60		
								RINSE PUMP / MOTOR STARTER	3 KW	480	3	60		
FLA-F[illegible]-001	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	N/A	N/A	N/A	N/A	N/A	[illegible]	[illegible]
GEL-FDRM01-001 AND -002	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	BACKWASH CONTROL MODULE	7.8 AMPS MAX	115-120	1	60	[illegible] COMPONENTS / BACKWASH CONTROLLER PRE-WIRED TO ULTRASONIC LEVEL SENSOR WITH 16 FT CABLE	[illegible]
								DRUM MOTOR / VFD	0.75 KW	480	3	60		
								RINSE PUMP / MOTOR STARTER	3 KW	480	3	60		
ALL-FDRM01-001	[illegible]	[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	BACKWASH CONTROL MODULE	7.8 AMPS MAX	115-120	1	60	[illegible] COMPONENTS / BACKWASH CONTROLLER PRE-WIRED TO ULTRASONIC LEVEL SENSOR WITH 16 FT CABLE	[illegible]
								DRUM MOTOR / VFD	0.75 KW	480	3	60		
								RINSE PUMP / MOTOR STARTER	3 KW	480	3	60		

OZONE SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	CAPACITY	ELECTRICAL POWER	VOLTS	PHASE	HERTZ	EMERGENCY POWER	REMARKS	SPECIFICATION
FLA-[illegible]	FLAMINGO EXHIBIT / OZONE [illegible]	1	40 G/HR (TWO 20 G/HR UNITS)	30 A	[illegible]	3	[illegible]	YES	[illegible]	[illegible]
FLA-[illegible]-001	FLAMINGO EXHIBIT / OFF GAS DESTRUCT	1	2 SCFM	1 A	[illegible]	1	[illegible]	YES	[illegible]	[illegible]
FLA-[illegible]	FLAMINGO EXHIBIT / OFF GAS DESTRUCT	1	100 SCFM	7 A	[illegible]	3	[illegible]	YES	[illegible]	[illegible]
FLA-OZCV01-001	[illegible]	1	[illegible]	N/A	N/A	N/A	N/A	N/A	[illegible]	[illegible]
FLA-[illegible]-001	FLAMINGO EXHIBIT / OZONE GAS [illegible]	1	[illegible]	5 A	[illegible]	1	[illegible]	YES	UFC COMPLIANT OZONE GAS DELIVERY [illegible]	[illegible]
FLA-[illegible] AND 002	[illegible] ALARM	1	N/A	N/A	N/A	N/A	N/A	N/A	POWER SUPPLIED BY OZONE GENERATOR [illegible]	[illegible]
FLA-[illegible]	FLAMINGO EXHIBIT AMBIENT OZONE MONITOR	1	N/A	N/A	N/A	N/A	N/A	N/A	LOCATED NEAR POINT OF INJECTION [illegible] AND LOW VOLTAGE WIRING [illegible]	[illegible]

SCREEN SCHEDULE

DESIGNATION	SERVICE/FUNCTION	QTY	SIZE	FLOW (GPM)	MEDIA	MATERIAL	ELECTRICAL REQUIREMENTS HP	VOLTS	PHASE	HERTZ	REMARKS	SPECIFICATION
SAV-[illegible]	SAVANNA EXHIBIT / STATIC SCREEN	1	[illegible]	[illegible]	WEDGE WIRE SCREEN, OPENING [illegible]	[illegible]	N/A	N/A	N/A	N/A	PARKSON HS [illegible]	[illegible]
FLA-SST[illegible]-001	FLAMINGO EXHIBIT / STATIC SCREEN	1	[illegible]	[illegible]	WEDGE WIRE SCREEN, OPENING [illegible]	[illegible]	N/A	N/A	N/A	N/A	PARKSON HS [illegible]	[illegible]
GEL-[illegible]	GELADA EXHIBIT / STATIC SCREEN	1	[illegible]	[illegible]	WEDGE WIRE SCREEN, OPENING [illegible]	[illegible]	N/A	N/A	N/A	N/A	PARKSON HS 120	[illegible]

U.V. STERILIZER SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	DESIGN FLOW (GPM)	MINIMUM CAPACITY [illegible]	ELECTRICAL POWER (AMPS)	VOLTS	PHASE	HERTZ	REMARKS	SPECIFICATION
SAV-[illegible]	SAVANNA EXHIBIT / ULTRAVIOLET STERILIZER	1	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]
FLA-[illegible]	FLAMINGO EXHIBIT / ULTRAVIOLET STERILIZER	1	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]
GEL-[illegible]	GELADA EXHIBIT / ULTRAVIOLET STERILIZER	1	[illegible]	[illegible]	[illegible]	[illegible]	1	[illegible]	[illegible]	[illegible]
ALL-[illegible]	ALLIGATOR EXHIBIT / ULTRAVIOLET STERILIZER	1	[illegible]	[illegible]	[illegible]	[illegible]	1	60	[illegible] / PROVIDE WITH [illegible] FLANGED CONNECTION AND STANDARD UV CONTROLLER / ELECTRICAL CONTRACTOR TO PROVIDE POWER TO CONTROLLER BOX / LSS CONTRACTOR TO INSTALL MANUFACTURER PROVIDED CABLES BETWEEN THE UV AND CONTROLLER	[illegible]

HEATER SCHEDULE

DESIGNATION	SERVICE / FUNCTION	QTY	CAPACITY [illegible]	FLOW (GPM)	ELECTRICAL POWER	VOLTS	PHASE	HERTZ	REMARKS	SPECIFICATION
ALL-[illegible]	ALLIGATOR EXHIBIT / HEATER	1	[illegible]	[illegible]	[illegible] AMPS	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

SAC ZOO

SH R Studios

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP ENGINEERING

exp.

REV	DATE	DESCRIPTION
1	[illegible]	[illegible]
1	[illegible]	[illegible]

NOT FOR CONSTRUCTION

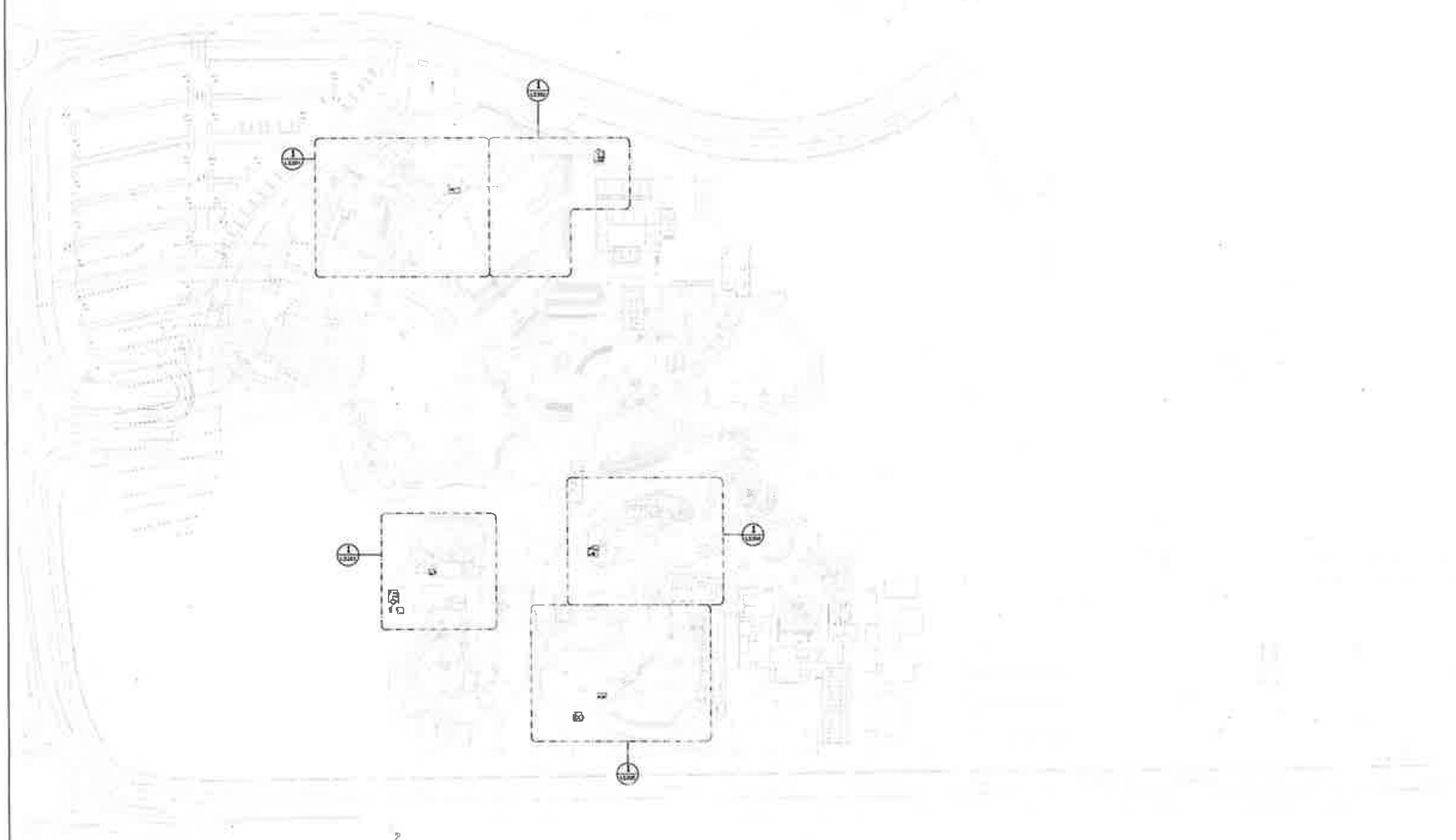
The New Zoo at Elk Grove

EQUIPMENT SCHEDULES

SHEET SIZE	ARCH E (36" x 48")
DATE	08 October 2023
SCALE	12" = 1'-0"
CHECKED	JBF
SHEET	

LS002

Schematic Plans



1 LSS SITE PLAN

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP

exp.

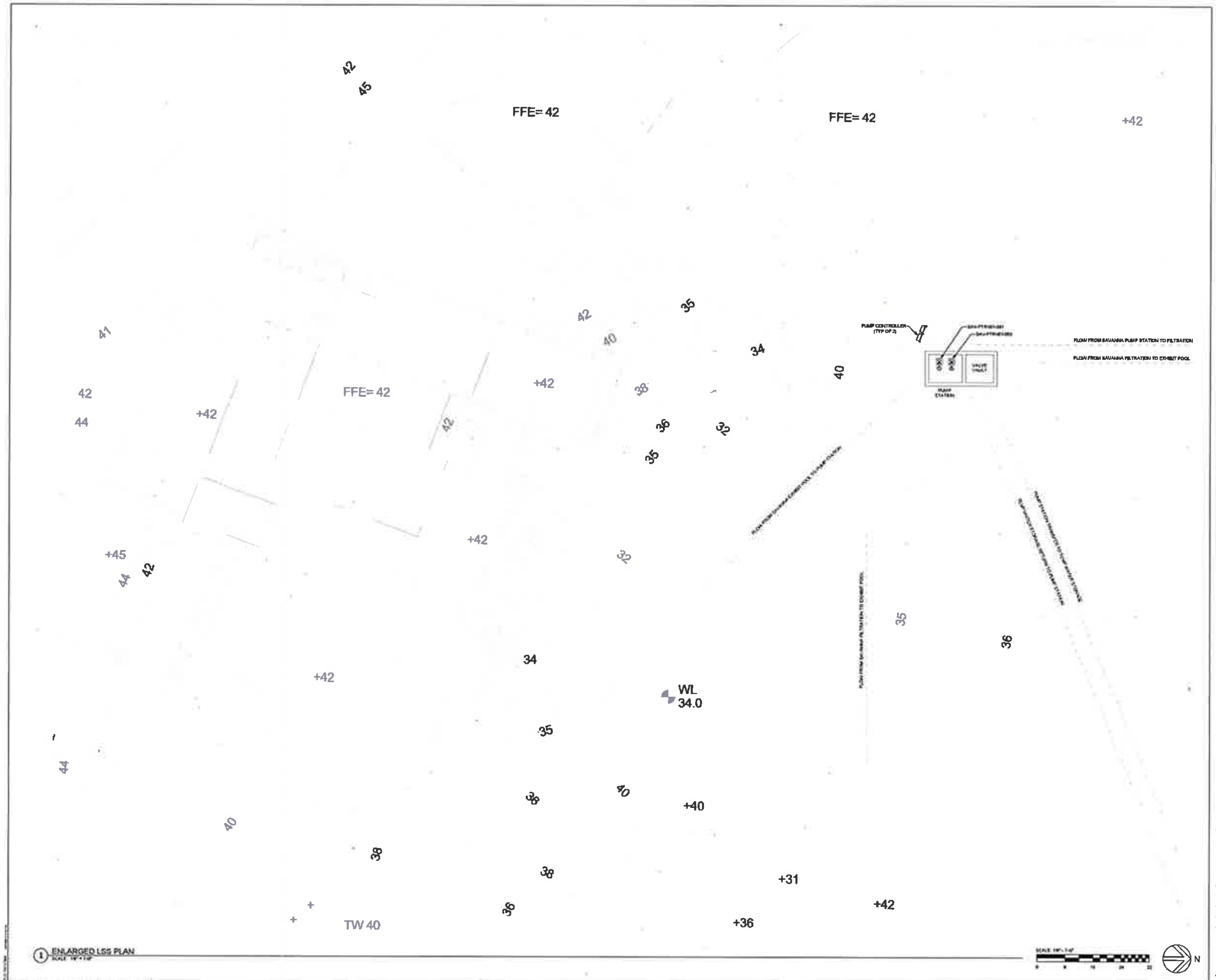
The New Zoo at Elk Grove

LSS SITE PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October, 2023
SCALE:	1/64" = 1'-0"
CHECKED:	JBF
SHEET:	

LS101

Schematic Plans



SAC ZOO

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP

exp.

NOT FOR CONSTRUCTION

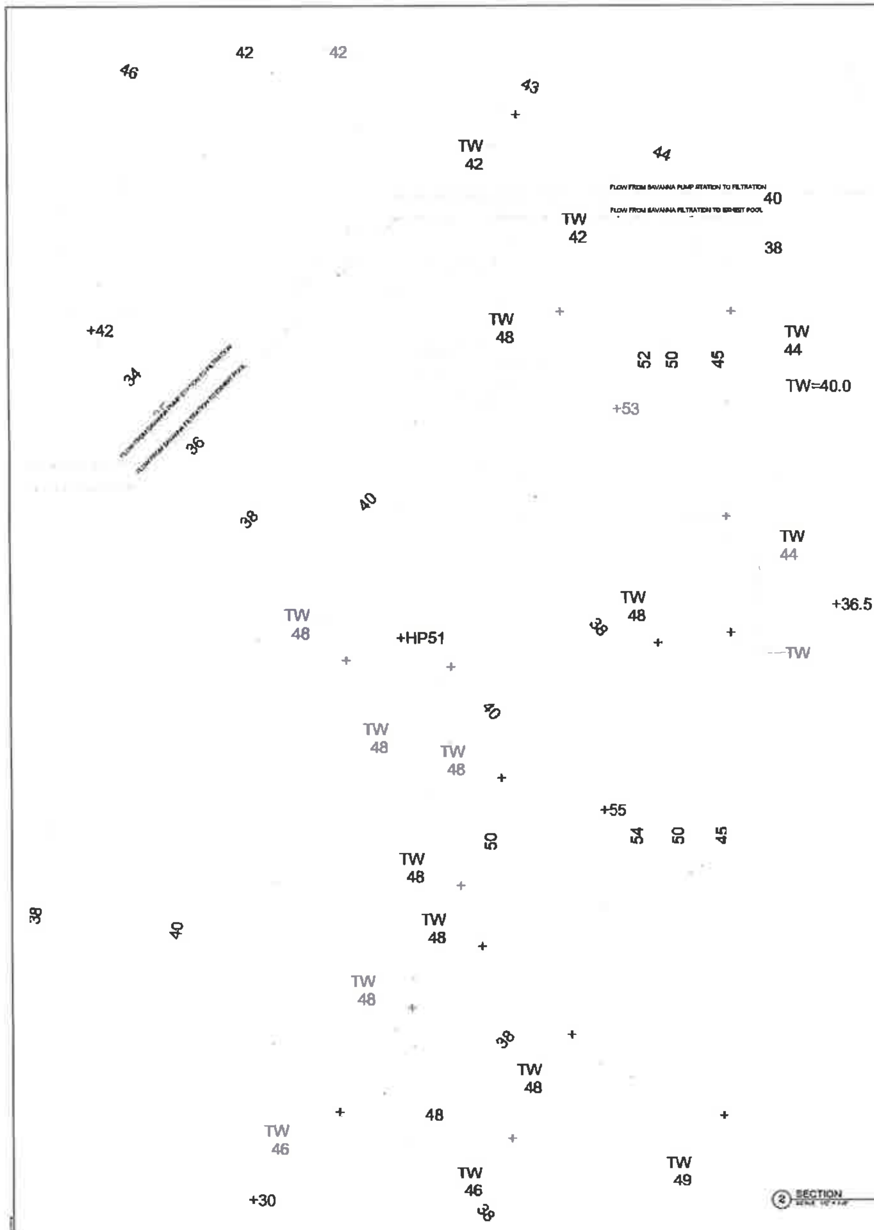
The New Zoo at Elk Grove

ENLARGED LSS PLAN

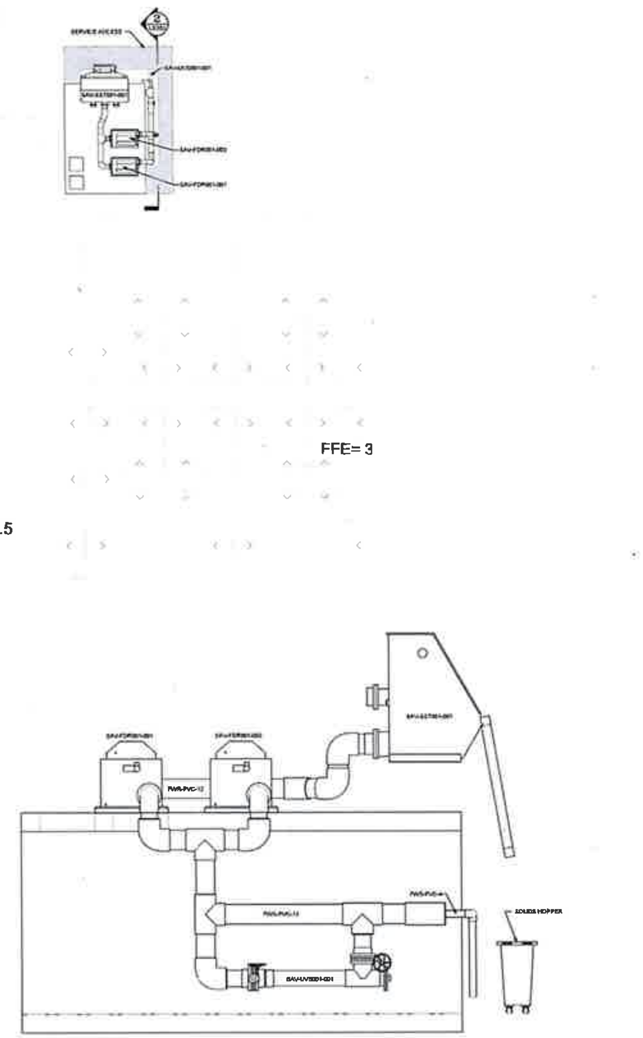
SHEET SIZE:
DATE:
SCALE:
CHECKED:
SHEET:

LS301

Schematic Plans



1 ENLARGED LSS PLAN



2 SECTION

SAC ZOO

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP

exp.

NOT FOR CONSTRUCTION

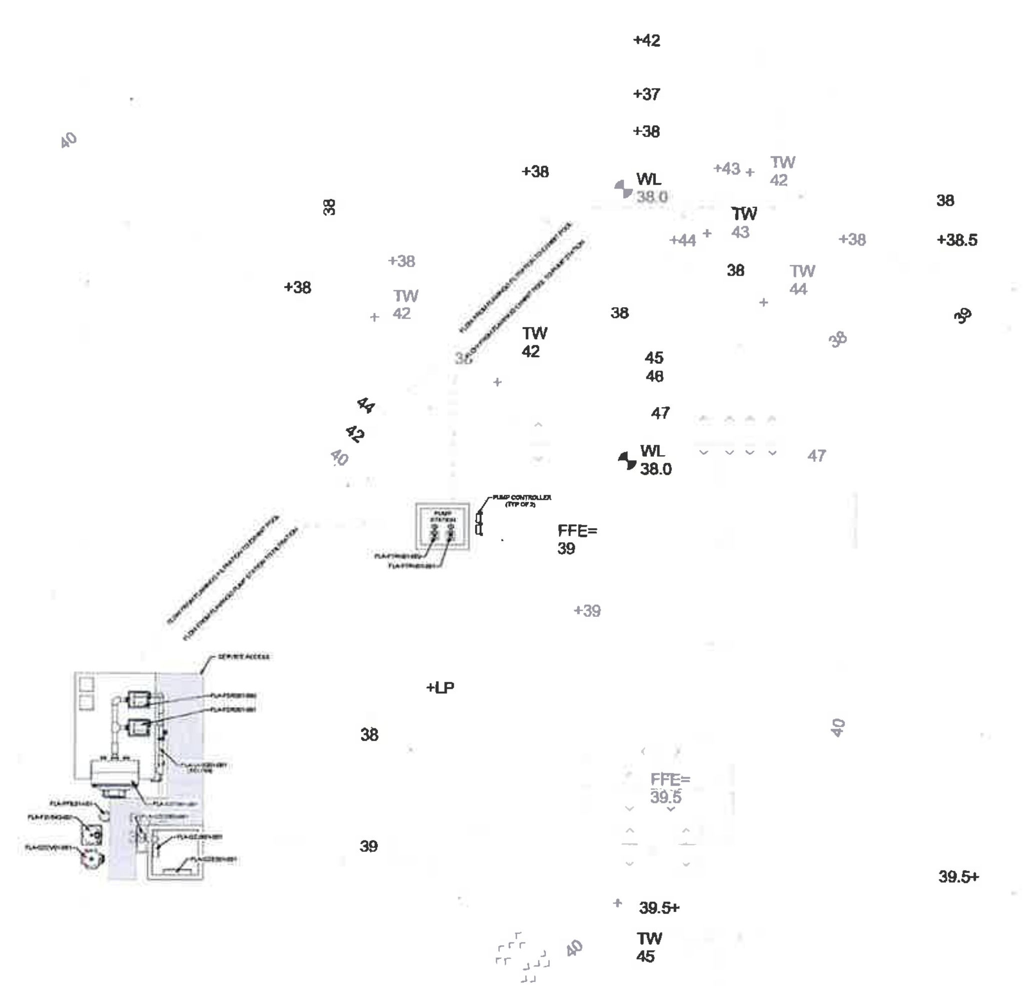
The New Zoo at Elk Grove

ENLARGED LSS PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	08 October 2023
SCALE:	As Indicated
CHECKED:	JNF
SHEET:	

LS302

Schematic Plans



1 ENLARGED LSS PLAN

SAC ZOO

SHLR STUDIOS

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP

exp.

NOT FOR CONSTRUCTION

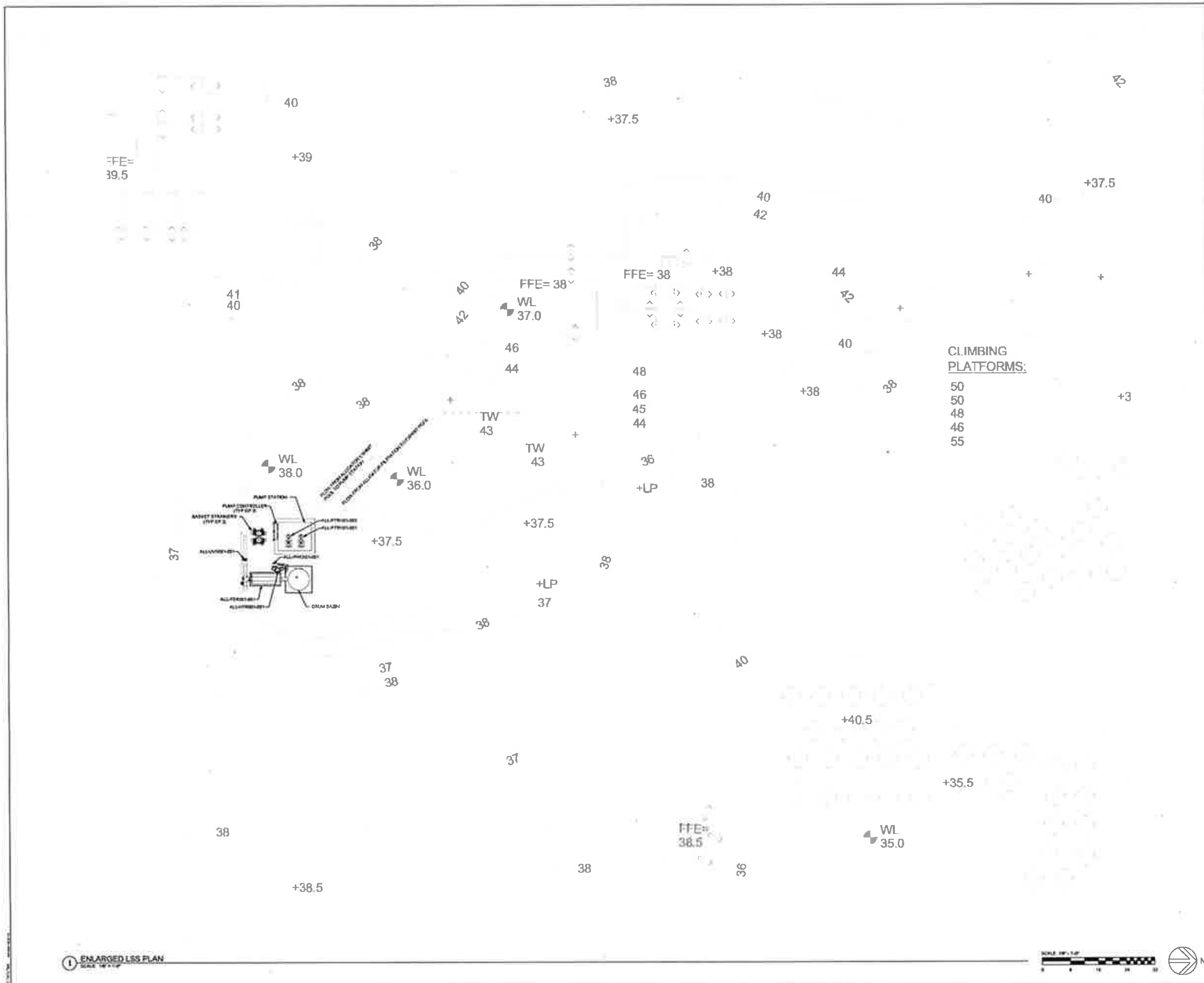
The New Zoo at Elk Grove

ENLARGED LSS PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	05 October, 2023
SCALE:	1/8" = 1'-0"
CHECKED:	JBF
SHEET:	

LS303

Schematic Plans



SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

The New Zoo at Elk Grove

ENLARGED LSS PLAN

SHEET SIZE: ARCH E (36" x 48")

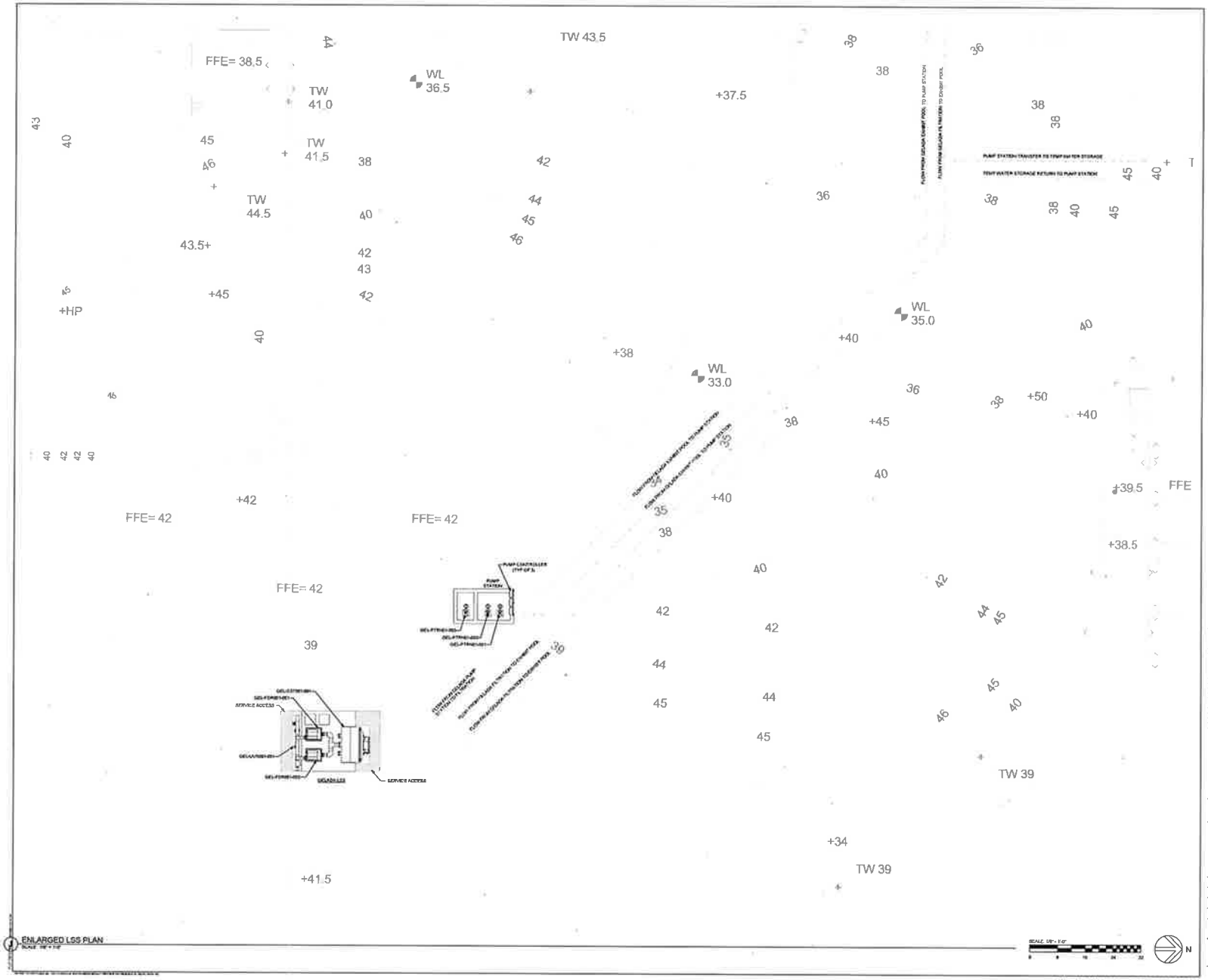
SCALE: 1/8" = 1'-0"

CHECKED: JW

SHEET:

LS304

Schematic Plans



SHR Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

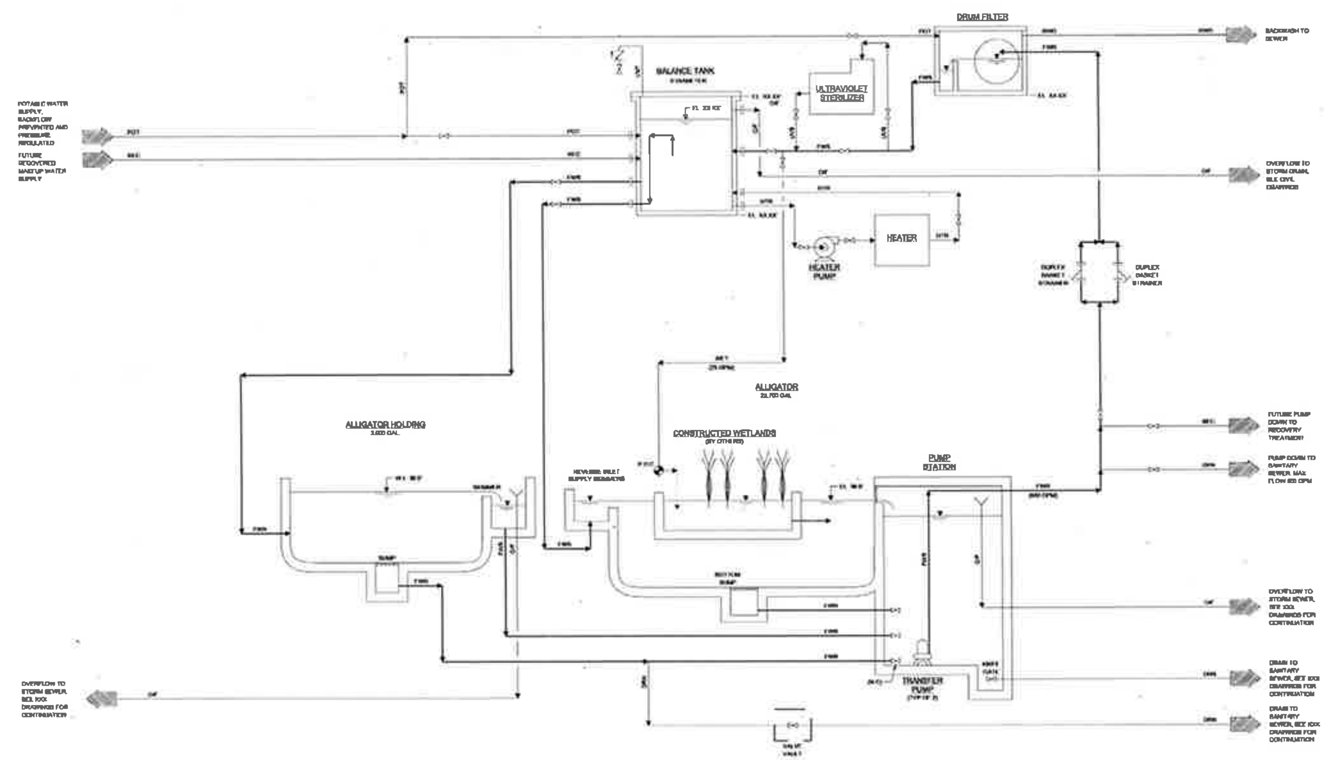
REV	DATE	DESCRIPTION
1	8/19/2024	Full Permit
2	10/4/2024	Full Permit

The New Zoo at Elk Grove

ENLARGED LSS PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	09 October, 2024
SCALE:	1/8" = 1'-0"
CHECKED:	AM
SHEET	LS305

Schematic Plans


DRUM FILTER
BALANCE TANK
ULTRAVIOLET STERILIZER
HEATER
HEATER PUMP
DUPLEX BASKET STRAINER
ALLIGATOR
ALLIGATOR HOLDING
CONSTRUCTED WETLANDS
PUMP STATION
TRANSFER PUMP
BACKWASH TO SEWER
OVERFLOW TO STORM DRAIN, SEE CIVIL DRAWINGS
OVERFLOW TO STORM SEWER, SEE XXX DRAWINGS FOR CONTINUATION
FUTURE PUMP DOWN TO RECOVERY TREATMENT
FUTURE RECOVERED MAKEUP WATER SUPPLY

ALLIGATOR - PROCESS FLOW DIAGRAM

SAC ZOO

SH/R Studios

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP ENGINEERING

exp.

The New Zoo at Elk Grove

ALLIGATOR - PROCESS FLOW DIAGRAM

SHEET SIZE: ARCH E (36" x 48")

DATE: 06 October 2023

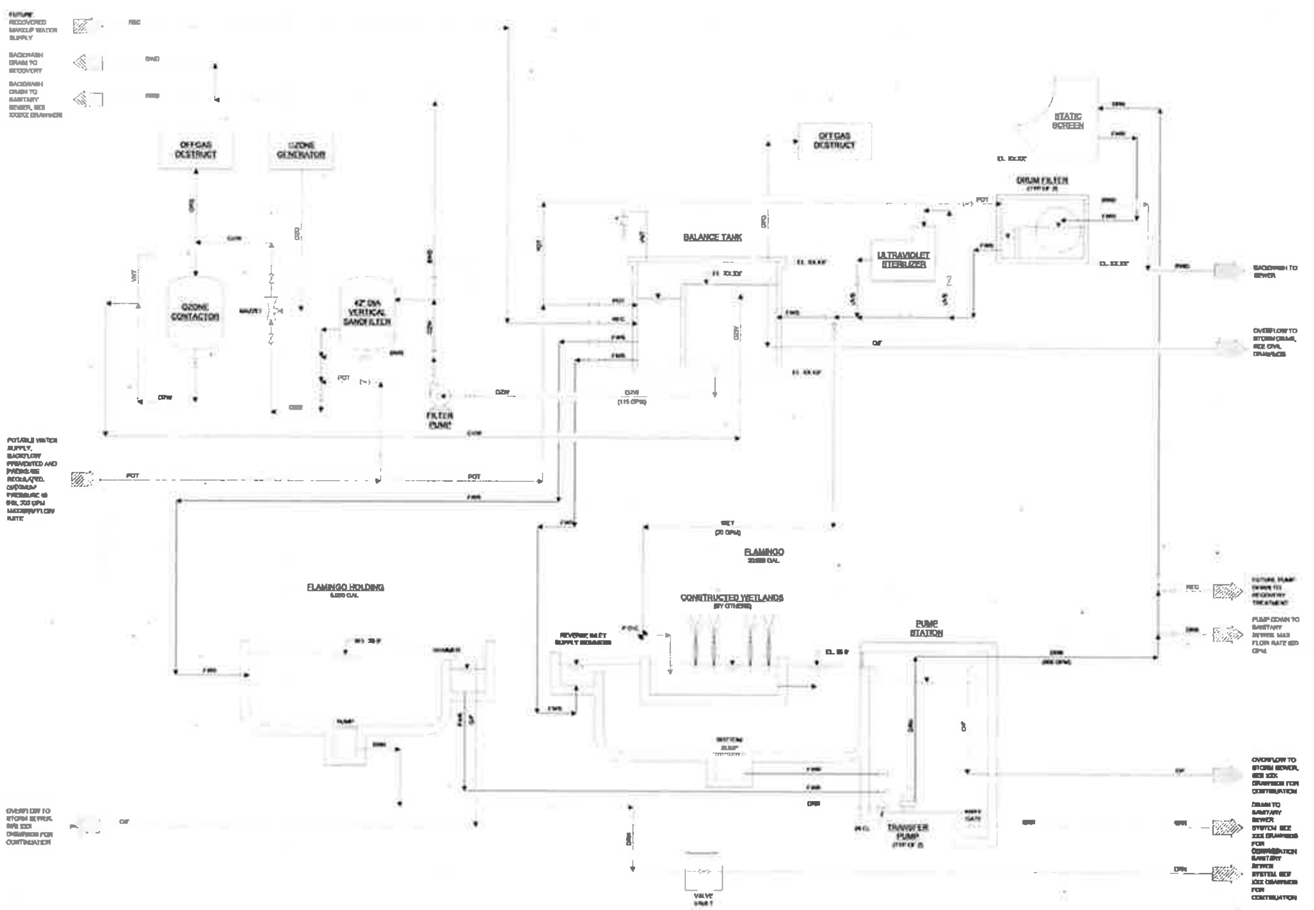
SCALE:

CHECKED: JEF

SHEET:

LS-ALL-021

Schematic Plans



FLAMINGO - PROCESS FLOW DIAGRAM

SAC ZOO

SH|R Studios

NOLL & TAM ARCHITECTS

Kimley-Horn

TJP

exp.

NOT FOR CONSTRUCTION

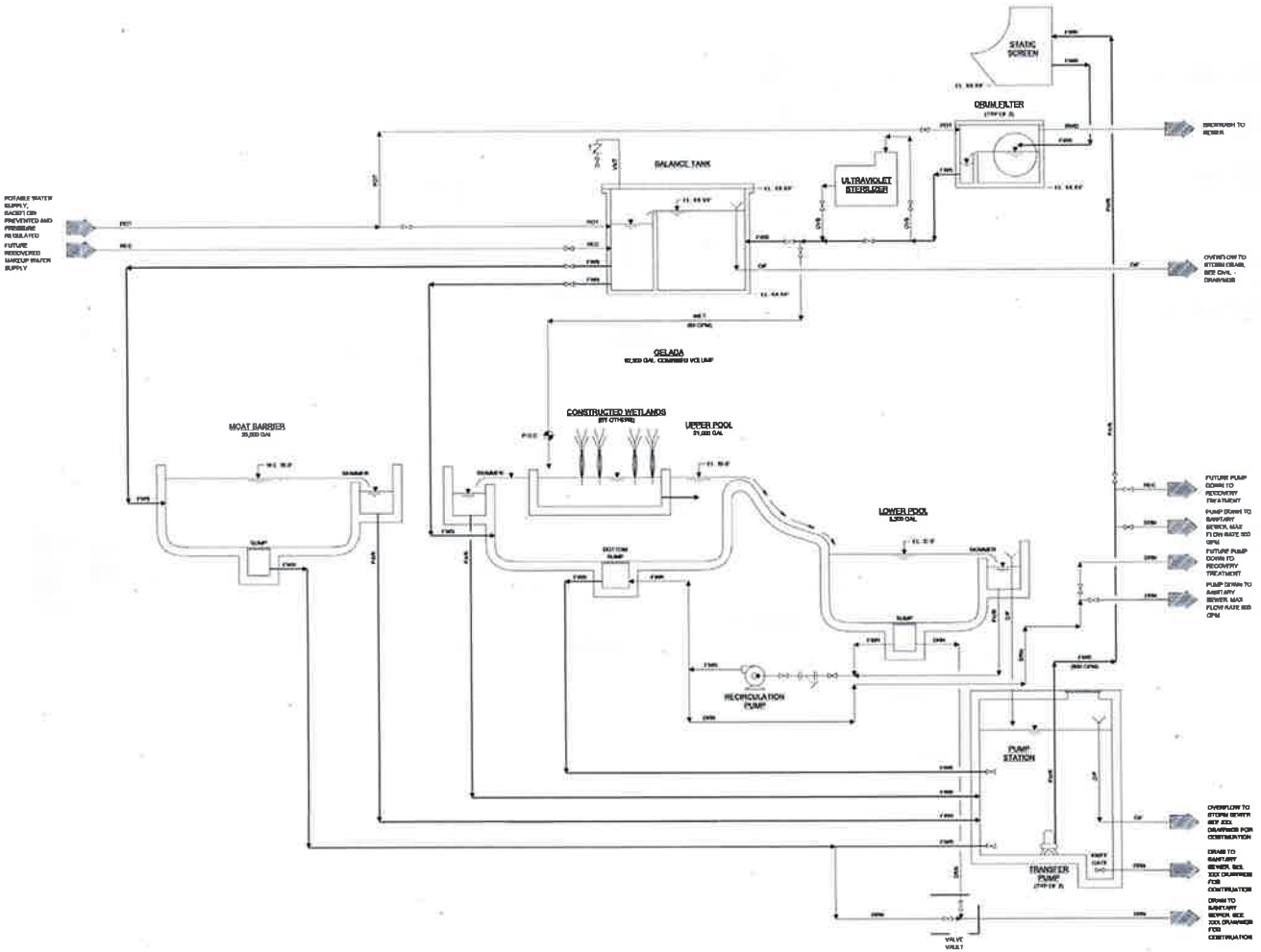
The New Zoo at Elk Grove

FLAMINGO - PROCESS FLOW DIAGRAM

SHEET SIZE: ARCH E (36" x 48")
DATE: 08 October, 2021
SCALE:
CHECKED: AW
SHEET:

LS-FLA-021

Schematic Plans



GELADA - PROCESS FLOW DIAGRAM

SAC 200

SHJR Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

REV	DATE	DESCRIPTION
1	06.02.2023	For Review
2	06.09.2023	For Pricing

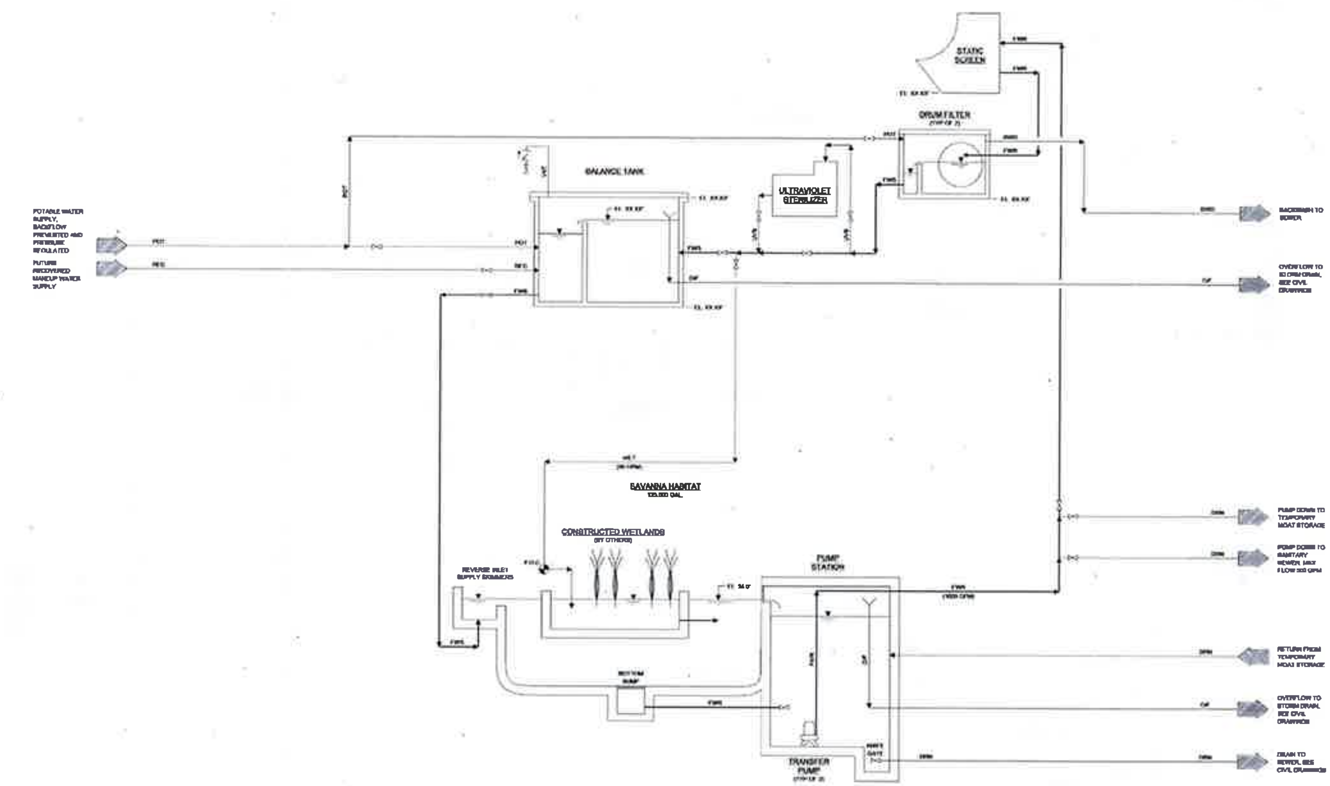
NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

GELADA - PROCESS FLOW DIAGRAM

SHEET SIZE:	ARCH E (36" x 48")
DATE:	06 October, 2023
SCALE:	
CHECKED:	AF
SHEET:	LS-GEL-021

Schematic Plans



SAVANNA HABITAT - PROCESS FLOW DIAGRAM

SAC ZOO

SH,R Studios

NOLL & TAM ARCHITECTS

Kimley»Horn

TJP ENGINEERING

exp.

NOT FOR CONSTRUCTION

The New Zoo at Elk Grove

SAVANNA HABITAT - PROCESS FLOW DIAGRAM

SHEET SIZE: ARCH E (36" x 48")
DATE: 05 October, 2023
SCALE:
CHECKED: RJ
SHEET:

LS-SAV-021

Schematic Plans

EXHIBIT C6

THE NEW ZOO AT ELK GROVE

Elk Grove, CA

LIGHTING DESIGN CONCEPT BOOK

Project Number
22011387.00

Date Submitted:
06 OCTOBER 2023

exp.

TABLE OF CONTENTS

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PROJECT WIDE CONSIDERATIONS....4
CONCEPT STATEMENT....7
EXTERIOR SITE FOH LIGHTING GLOW PLAN....8
AREA
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- THE GREEN CORRIDOR....11
- THE FUN ZONE....12
- GELADA CAFE AND ANIMAL CARE CENTER....13
- BEER GARDEN....14
- AFRICA....15

FIXTURE IMAGERY....16

OVERVIEW

The purpose of the following presentation is to develop the lighting aesthetic for the overall experience at The New Zoo at Elk Grove. The presentation will consist of the following items:

- A narrative describing the feeling of the lighting and description of the approach to achieving it
- Conceptual fixture and application imagery that conveys the feeling and features for the areas indicated
- Conceptual Glow Plan to convey the general design approach to light dispersal

This presentation of ideas and approaches to the lighting environment will achieve the project lighting needs for the safety, security and enjoyment of the guests and staff.

In a walk through narrative approach and through the use of 'look of' visual images, this presentation will express the design intent for the general illumination of the patron accessible areas and supporting spaces within EXP's scope.

Above all, the lighting will become a seamless element of the overall interior design and landscape architecture.

PROJECT WIDE CONSIDERATIONS

CONTROL

It is desirable to develop a project-wide lighting control system of controlled dimming devices and controlled switching devices. The control system should be of a type that allows subdivision into control zones that can operate autonomously. Localized dimming and switching racks shall be linked through a project wide communications loop that offers centralized control with local access as needed.

This control system would apply to all lighting within the scope of this document and may include all remaining general lighting project-wide. If not included, this lighting system would integrate fully with other automated control systems within the project. This control system would also have an internal astronomical time clock to allow automatic changes due to variations in events keyed to rising or setting of the sun.

A system such as this has the following advantages:

- Maintenance of design aesthetic
- Energy conservation
- Conservation of maintenance personnel resources
- Repeatability
- Flexibility in providing changes for special events or season variations in operations

Exterior lighting shall be controlled by the same project wide system and shall be able to be linked to or triggered by the Night Show control system.

PROJECT WIDE CONSIDERATIONS

ILLUMINATION LEVELS

Continuous, even illumination is neither required nor desirable. Shadow is as important in defining the quality of a space as light.

Each space shall be strategically reviewed and designed using layering of light. Ambient lighting shall provide the base level of illumination in an area. Accent lighting shall be used to create drama in the space, producing contrast and helping to draw the eye to the focal features. Task lighting shall be added for the functional level of lighting to accommodate fine visual tasks that require higher levels of visibility.

From a safety standpoint, in areas where illumination is lower, the following requirements shall be met:

- All walking areas should have no obstructions that could cause tripping.
- All changes of elevation, including beginning and end of ramps, are illuminated to a minimum of 1 footcandle.
- All changes of elevation, including stairs, are illuminated to a minimum of 10 footcandles.
- All obstructions are either illuminated to define their shape or have some type of restraining device to prevent direct approach. Defining a shape by illumination does not necessarily mean that it needs to be lit directly. For example, a lit area behind a unit obstruction could define the edges of the obstruction enough to provide a safe level of illumination.

Illumination levels for the project shall be in accordance with the recommendations of the Illuminating Engineering Society (IES) Lighting Handbook.

PROJECT WIDE CONSIDERATIONS

LIGHT QUALITY

Quality of light is as important, if not more so, than quantity. Our eyes are stimulated not only by the amount of light, but also by the color. Generally, we feel safer in environments lit by warm, bright light where colors are vibrant and easily identifiable. Recent advances in lamp technology now offer light sources with long life, dimmability, and high color rendering ability. LEDs will be the principle star of this project. Wherever possible, this source will be used.

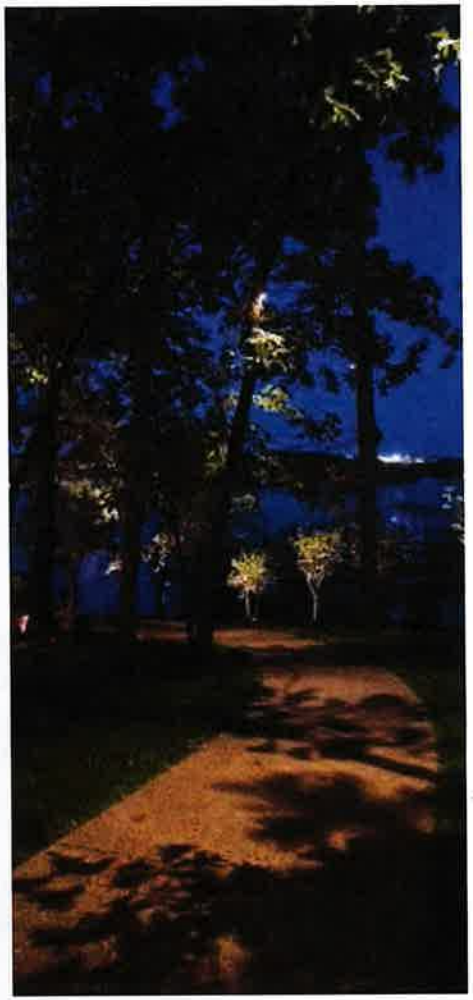
The overall approach will be warm and inviting. Complimenting the architecture and interior design of the space, we will highlight selected areas and expose shadows in others. As the user progresses through the property, the lighting will provide balance while activating certain elevations.

LIGHT FIXTURE STYLES

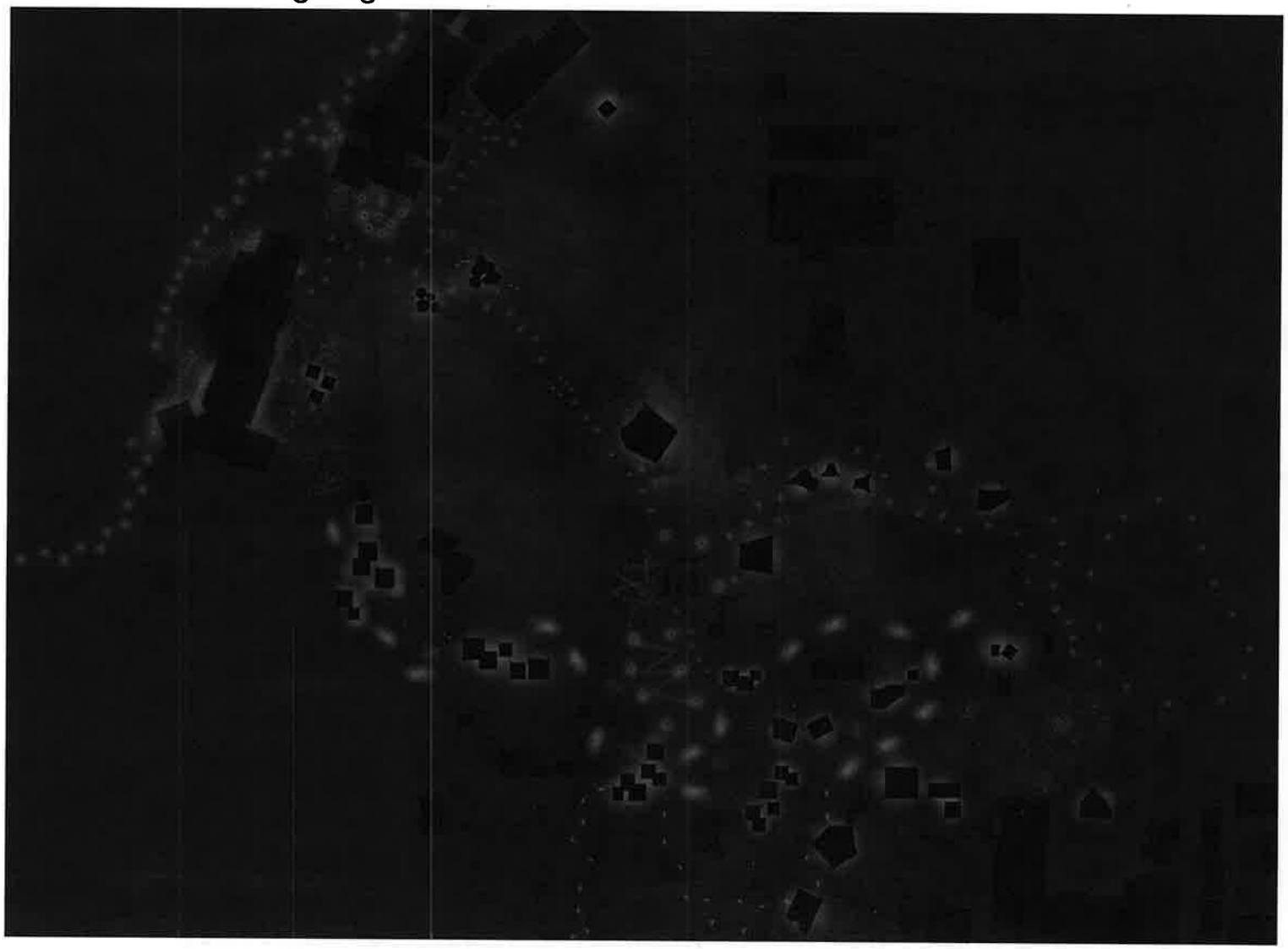
Fixtures located exterior to the building and/or in unconditioned wet spaces and in direct contact with the weather or in washdown areas shall be UL listed as "Suitable for Wet Locations" unless noted otherwise. Fixture material and finish should be durable and corrosion resistant. Fixtures located on the interior shall be UL listed as "Suitable for Damp Locations" unless otherwise noted.

Lighting Concept Statement:

LIGHT hidden within nature producing wonderous evening environments for the guests, gracefully enhancing the architecture, while protecting animal habitats and the sky above.



Exterior Site FOH Lighting Glow Plan



Fixture and Application Concept Imagery

MAIN ENTRY COMPLEX

grand • inviting • sculpted

Up lighting at the base of the tree columns to highlight them as a feature and glow the ceiling canopy.

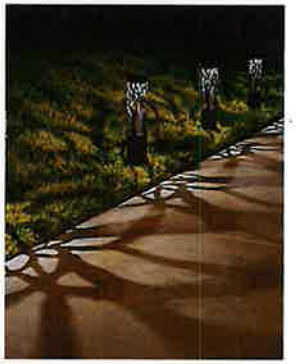
Dark sky friendly down grazing of the textured plaster facades.

Additional option of downlighting through the branches of the tree columns.

Fixture and Application Concept Imagery

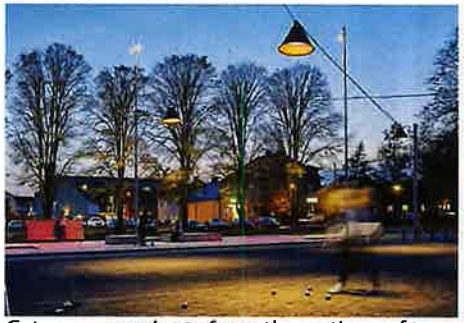
THE LODGE

elegant • adventure • warm



Entry and site lighting features

Surface mounted accents at patio trellis.



Catenary pendants from the patio roof to poles for Games Lawn illumination.

Fixture and Application Concept Imagery

THE GREEN CORRIDOR

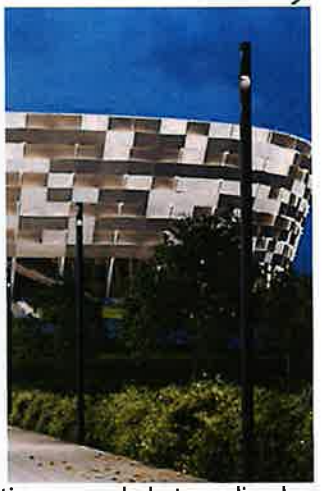
flow • vibrant • lively




Lighting integrated into or mounted onto shade structures to provide general illumination for surrounding area. Pathways to be lit from structures primarily wherever possible.


LED nodes integrated into railings at stairs.



Pedestrian poles and bollards for general pathway illumination as needed; streamlined design with wood patterned powder coated finish.

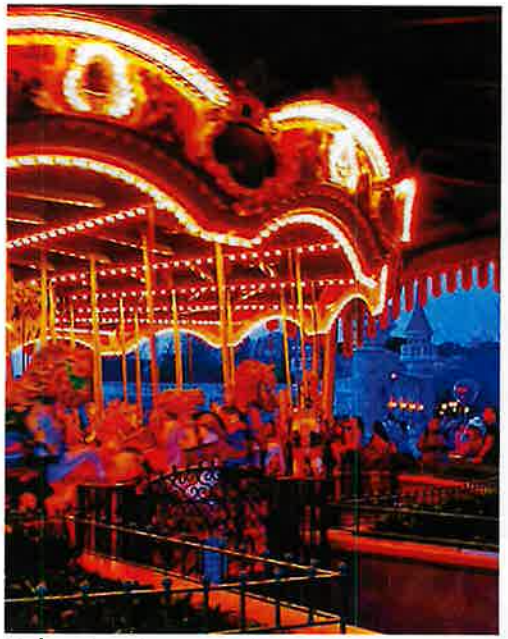
Adjustable luminaires mounted in trees for a downward moonlighting effect at large feature trees along main pathway.

Fixture and Application Concept Imagery

THE FUN ZONE

Color-changing string lights mounted to shade canopies.

Image projectors creating colorful patterned light at the pathways and gathering areas.



Multi-colored marquee bulbs and accent floods at the Carousel.

Sparkle detail in pathway material to reflect sunlight or glow at night.

color • sparkle • fun

Fixture and Application Concept Imagery

GELADA CAFE AND ANIMAL CARE CENTER

Adjustable accents mounted to shade structure to illuminate Cafe queue.

cheerful • welcoming

Gasketed low-glare recessed lighting for Animal Care Lab and Treatment rooms.

Outer glow emanating from behind Cafe order window, providing a soft glow on the tile wall.

Small recessed downlights along guest path at Animal Care viewing windows. Downlights to have deep regressed apatured lighting to reduce lighting glare on glass.

Fixture and Application Concept Imagery

BEER GARDEN

String lighting with shades festooned below sale shades.

modern • industrial • comfort

Pole mounted RLM shades for general illumination in open areas.

Industrial pendants and task lighting at bar.

RLM sign lighter at graphics.

Fixture and Application Concept Imagery

AFRICA

Low level pathway lighting at all paths and stairs.

Habitat illumination via moonlighting from trees, where possible.

Surface mounted downlighting at viewing shade structures for general illumination.

Surface mounted adjustable accents to illuminate pathways adjacent to shade structures.

organic • integrated • subtle

Habitat illumination via shade structure mounted gobo projectors with visors. Where surrounding structures are not tall enough and there are no appropriate trees for moonlighting, discrete poles with will be utilized for mounting.

Fixture Imagery














EXHIBIT C7

MECHANICAL, ELECTRICAL, PLUMBING, FIRE PROTECTION, AND TECHNOLOGY ENGINEERING

BASIS OF DESIGN

SCHEMATIC DESIGN SUBMISSION

OCTOBER 6, 2023

FOR PRICING

NEW ZOO AT ELK GROVE

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4. Sustainability and Energy Efficiency
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6. Piping
7. Insulation
8. Air Devices
9. Sound and Vibration Control
10. Building Pressure Relationships
11. Air Handling Unit Requirements
12. Building Automation and Controls
13. Equipment and Materials
14. Occupancy Assumptions
15. Operation and Maintenance
16. Component Specific Details
    - 16.1. Food and Beverage
    - 16.2. Restrooms
    - 16.3. Retail
    - 16.4. Animal Holding
    - 16.5. Area Development
    - 16.6. General and Support Buildings/Areas
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    - 8.2. Restrooms
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    - 8.4. Animal Holding
    - 8.5. Area Development
    - 8.6. General and Support Buildings/Areas
9. Appendix

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6. Domestic Cold Water System
7. Domestic Hot Water System
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    - 14.2. Restrooms
    - 14.3. Retail
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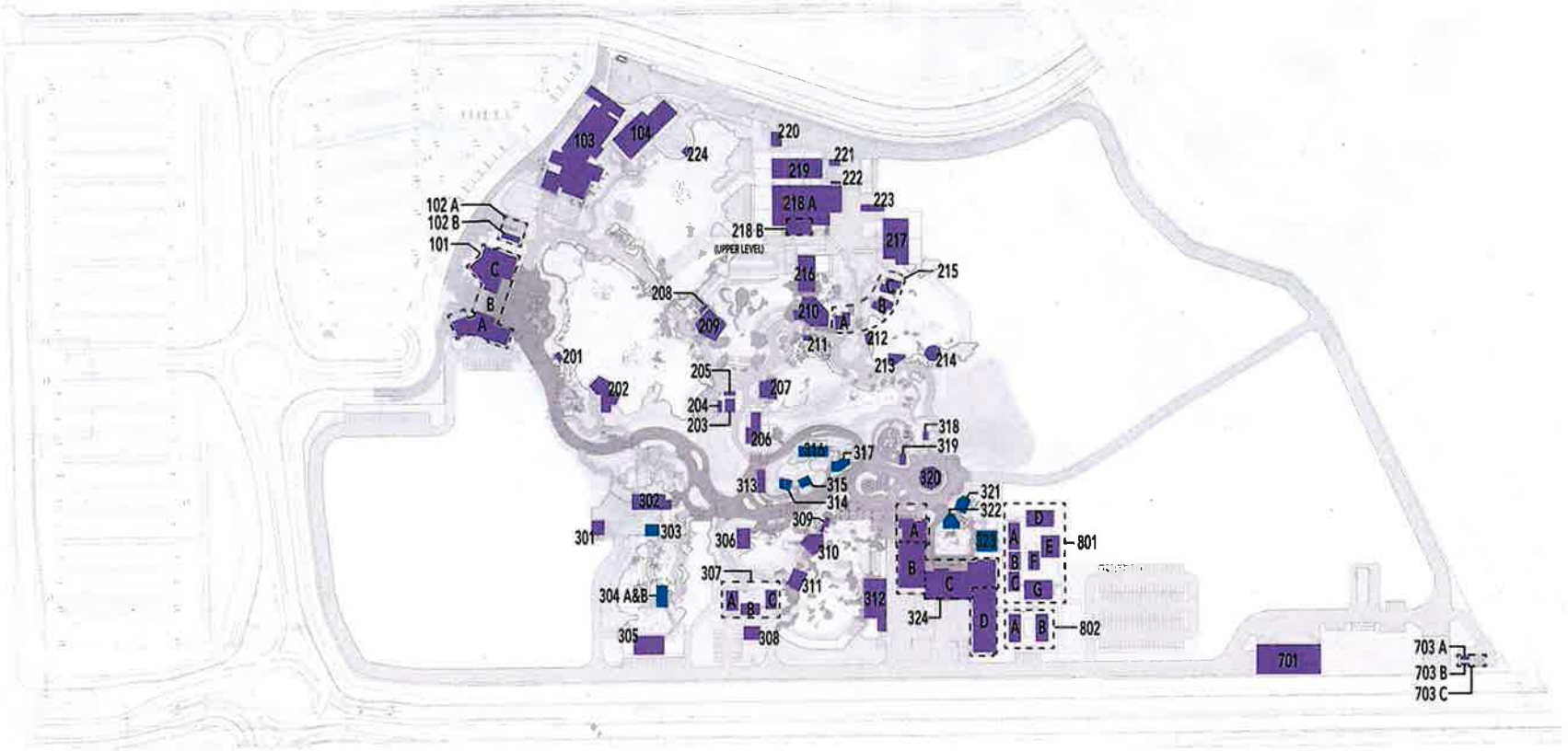
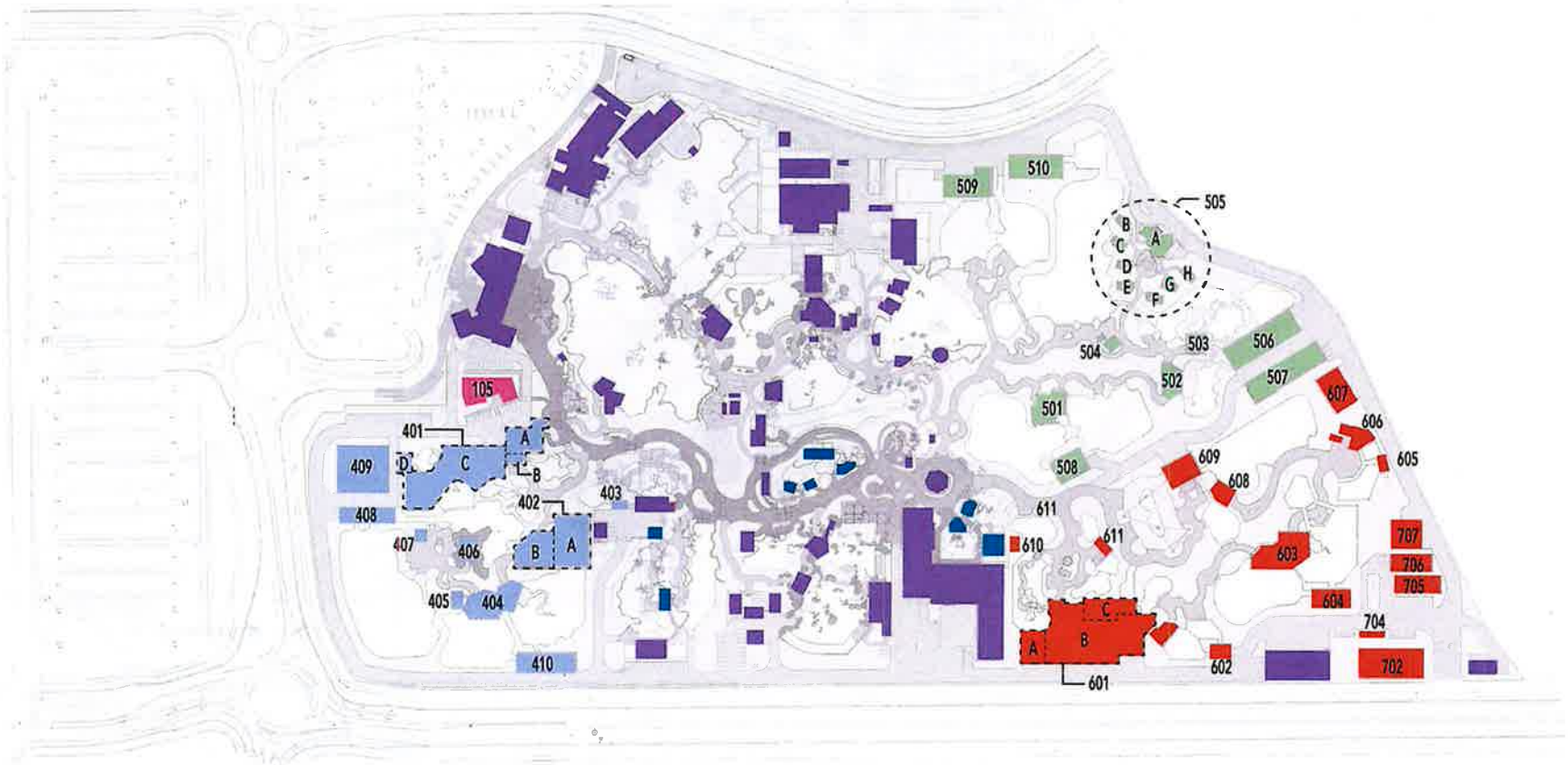
A. Project Summary

1.1. The scope of this project covers a new 65 acre zoological park in Elk Grove, CA. The site plans are shown below:

1.1.1. Phase 1a & 1b:



1.1.2. Future Build Out:



1.2. The building program for this project includes the following main buildings/attractions below:

Phase 1a and 1b

BLDG #	BLDG Name	Size (sf)
101	Guest Services/Restrooms/Ticketing	4,700
101	Retail	5,900
102	Education Entry Restrooms	500
103	The Lodge	12,000
104	Events Pavilion	7,100
201	Dwarf Mongoose Care Quarters	200
202	Giraffe Feeding Shelter Canopy	2,200
202	Giraffe Feeding Shelter Sales Room	150
203	Beer Garden Restrooms	800
204	Beer Service	250
205	Beer Service	250
206	Cheetah Care Quarters	1,800
207	Cheetah View Shelter	1,400
208	Fennec Fox Care Quarters	300
209	Lion View Shelter 1	2,600
210	Lion View Shelter 2	4,600
211	Meerkat Care Quarters	150
212	Rhino View Shelter 1	420
213	Rhino View Shelter 2	720
214	Rhino Encounter Shelter	900
215	Overnight Guest Duplex	900
215	Overnight Guest Duplex	900
215	Overnight Guest Duplex	900
216	Lion Care Quarters	3,200
217	Rhino Care Quarters	4,400
218	Giraffe Care Quarters	11,500
218	Overnight Guest Suite	1,400
219	Hoofstock Care Quarters	4,200
220	Savanna LSS	3,800
221	Walk In Browse Cooler	200
222	Hay Storage	500
223	Event Lawn Giraffe Feeding Shelter	150

BLDG #	BLDG Name	Size (sf)
301	Flamingo LSS	1,400
302	Flamingo Care Quarters/Brooder	2,200
303	Africa Aviary Care Quarters	600
304	Lvl 1: Vestibule	860
304	Lvl 2: Colobus Care Quarters	1,500
305	Okapi Care Quarters	2,200
306	Giant Tortoise Care Quarters	1,100
307	Multipurpose Room	1,000
307	Multipurpose Room	1,000
307	Multipurpose Room	1,000
308	Gelada LSS	1,100
309	Klipsringer/Hyax Holding	430
310	Gelada View Shelter 2	1,500
311	Gelada View Shelter 1	1,300
312	Gelada Care Quarters	4,500
313	Train Depot	1,100
314	Alligator Viewing Shelter 1	500
315	Alligator Viewing Shelter 2	500
316	Alligator & Sq. Monkey Care Quarters	1,600
317	Squirrel Monkey Viewing Shelter	1,000
318	Parrot Care Quarters	250
319	Play Area Restrooms & Lactation Room	650
320	Carousel Pavilion	1,500
321	Lemur View Shelter 1	800
322	Lemur View Shelter 2	1,000
323	Lemur Care Quarters	1,600
324	Quarantine & Nutrition Center)	22,000
701	Maintence Shed/Shops	8,700
703	Containerized Fodder System	160
703	Walk In Browse Cooler	200
703	Roof	1,500

BLDG #	BLDG Name	Size (sf)
801	Admin Modular 1	1,500
801	Admin Modular 2	900
801	Admin Modular 3	1,000
801	Admin Modular 4	2,300
801	Admin Modular 5	2,000
801	Admin Modular 6	2,500
801	Restrooms - Prefabricated	1,000
802	Animal Staff Modular 1	1,800
802	Animal Staff Modular 2	1,800

Full Buildout

BLDG #	BLDG Name	Size (sf)
105	Administration / Staff Support & Offices (2-stories)	9,500
401	Changing Exhibits	5,000
401	Otter Care Quarters & LSS	3,000
401	California Fresh Waters Indoor Exhibits	18,600
401	Beaver Care Quarters	1,100
402	Education & Classrooms	9,000
402	California Deserts Indoor Exhibits	6,000
403	Capybara Care Quarters	800
404	Grizzly Bear View Shelter	6,000
405	Bobcat Care Quarters	1,000
406	Restrooms - California	1,800
407	Food Kiosk	500
408	Big Horned Sheep Care Quarters	1,600
409	Rescue & Rehab Facility	11,000
410	Grizzly Bear Care Quarters & LSS	5,000
501	African Ape Viewing	4,000
502	Hippo Springs View Shelter	1,800
503	Hippo River View Shelter	2,500
504	Food & Restroom Kiosk	800
505	Overnight Arrival Building	2,100
505	Accomodation 1	300
505	Accomodation 2	300
505	Accomodation 3	300
505	Accomodation 4	300
505	Accomodation 5	300
505	Accomodation 6	300
505	Accomodation 7	300
506	Hippo Care Quarters	10,000
507	Hippo+Tiger Filtration	8,500
508	African Ape CQ	900
509	Wild Dog / Hyena CQ	3,700
510	Rhino Breeding / Hoofstock CQ	5,600

BLDG #	BLDG Name	Size (sf)
601	Wallace Line Gallery Indoor Exhibits	19,000
601	Komodo Dragon/Red Panda C.Q.	1,400
602	Clouded Leopard Care Quarters	3,000
603	Tiger View Shelter	4,800
604	Tiger Care Quarters	3,500
605	Aviary Care Quarters 1	800
606	Restrooms - Asia	1,000
606	Aviary Viewing Shelters	2,900
606	Food Kiosk	500
607	North Water Recovery	4,800
608	Asian Ape View Shelter	2,000
609	Asian Ape Care Quarters	7,500
610	Cassowary Care Quarters	300
611	Australian Aviary Care Quarters	300
612	Clouded Leopard View Shelter	1,400
702	Maintence Shed/Shops	8,500
705	Greenhouse 2	3,800
706	Greenhouse 1	3,800
707	Event Storage	3,800

MECHANICAL ENGINEERING
BASIS OF DESIGN
SCHEMATIC DESIGN SUBMISSION
OCTOBER 6, 2023
FOR PRICING
NEW ZOO AT ELK GROVE

1. Executive Summary

1. Mechanical (HVAC) systems scope shall include heating, ventilating, and air conditioning systems represented in Specification Division 23.

   The mechanical systems scope shall include the following general items:

   - Ductwork and ventilation systems
   - Piping and hydronic systems
   - Heating equipment and systems
   - Cooling equipment and systems
   - HVAC control systems

2. Applicable Codes, Guidelines and Standards

1. Design and installation will conform with requirements of identified codes, standards and guidelines. Where differences arise between codes, standards or guidelines, applicable code will prevail. In cases, where edition or year is not indicated, current edition will apply.

   2.1.1. 2022 California Building Code
   2.1.2. 2022 California Mechanical Code
   2.1.3. 2022 California Energy Code
   2.1.4. 2022 California Fire Code
   2.1.5. SMACNA (*Sheet Metal & Air Conditioning Contractors' National Association)*
   2.1.6. NFPA (*National Fire Protection Association*)
   2.1.7. ANSI/ASHRAE/IESNA Standard 90.1-2013, *Energy Standard for Buildings Except Low-Rise Residential Buildings*
   2.1.8. ASHRAE 62.1-2010, *Ventilation for Acceptable Indoor Air Quality*

3. Load Calculation Criteria

1. Heating and cooling load calculations for the various spaces will be based upon a combination of 3rd party load calculation software (Trane Trace) and EXP's load calculation spreadsheet method. Load calculations for Code compliance for the building envelope will be performed separately as required by the AJH.

2. Outdoor Design Conditions shall be based upon the following, per ASHRAE Fundamentals 2017 – Sacramento Executive AP, CA:

   Summer: (0.4%)
   Dry Bulb = 100.2°F
   Mean Coincident Wet Bulb = 69.6°F

   Evaporation Mean Coincident (for cooling coil selections):
   Wet Bulb = 72.1°F
   Mean Coincident Dry Bulb = 95.1°F

   Winter: (99.6%)
   Dry Bulb = 31.5°F
   5 Year Low = 25.6°F

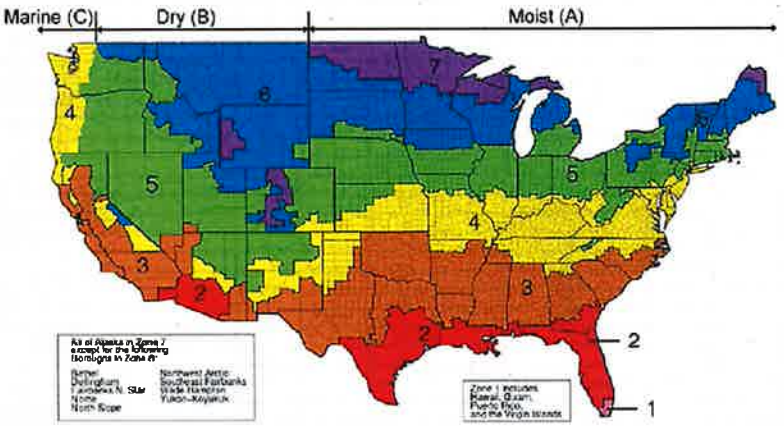


FIGURE 1: CLIMATE ZONE MAP (ZONE 3C)

3. Indoor Design Conditions.

   3.3.1. The heating and cooling load calculations for the mechanical system will be based on the following summary table listing combined electrical and equipment loading for the various spaces. These loads will be used as an overall building average for sizing equipment. Lighting loads will be based on the Space-by-Space Method (Table 9.6.1) of ASHRAE 90.1-2004.

   3.3.2. Some unique spaces will have internal loads which exceed the general values listed. The internal loading for these spaces will be determined based on the electrical and process requirements of the equipment to located in these spaces.

   3.3.3. Ventilation loads are summarized in a separate section.

Table 1. Indoor Design Conditions

Room Type	Summer		Winter		Lighting Heat Gain (watts/sf)	Equipment Heat Gain (watts/sf)	Occupant Heat Gain (BTUH/person)	
	Temp (°F)	Maximum Relative Humidity (%)	Temp (°F)	Minimum Relative Humidity (%)			Sensible	Latent
-	-	-	-	-	-	-	-	-
FOOD AND BEVERAGE SERVICE	-	-	-	-	-	-	-	-
Restaurant Dining Rooms	74	55	70	-	-	-	-	-
Cafeteral, Fast Food	74	55	70	-	-	-	-	-
Bars, Cocktail Lounges	74	55	70	-	-	-	-	-
Kitchens (Cooking)	77	58	65	-	-	-	-	-
-	-	-	-	-	-	-	-	-
GENERAL	-	-	-	-	-	-	-	-
Breakrooms	74	55	70	-	-	-	-	-
Coffee Stations	74	55	70	-	-	-	-	-
Conference/Meeting	72	55	70	-	1.5	2	250	200
Corridors	75	55	70	-	0.7	-	225	105
Storage Rooms	77	55	65	-	-	-	-	-
-	-	-	-	-	-	-	-	-
OFFICE BUILDINGS	-	-	-	-	-	-	-	-
Lobbies/Prefunction	74	55	70	-	-	-	-	-
Multi-Purpose Assembly	72	55	70	-	-	-	-	-
Offices, Commercial - General	74	55	70	-	1.5	2	245	155
Offices, Commercial - Perimeter	74	55	70	-	1.5	2	245	155
Offices, Commercial - Interior	74	55	70	-	1.5	2	245	155
Reception Areas	72	55	70	-	-	-	-	-
Telecommunication Centers/Data Entry Areas	72	55	70	-	-	-	-	-
-	-	-	-	-	-	-	-	-
MISCELLANEOUS SPACES	-	-	-	-	-	-	-	-
Computer	72	55	65	-	-	-	-	-
Electrical Equipment Rooms	77	55	60	-	-	-	-	-
Electrical Elevator Machine Rooms	77	55	60	-	-	-	-	-
Photo Studios	72	55	70	-	-	-	-	-
Shipping and Receiving	72	55	20	-	-	-	-	-
Transportation Waiting	72	55	65	-	-	-	-	-
Warehouses	77	55	65	-	-	-	-	-
IDF/MDF Electronic Eqpt	72	55	60	-	-	-	-	-

Room Type	Summer		Winter		Lighting Heat Gain (watts/sf)	Equipment Heat Gain (watts/sf)	Occupant Heat Gain (BTUH/person)	
	Temp (°F)	Maximum Relative Humidity (%)	Temp (°F)	Minimum Relative Humidity (%)			Sensible	Latent
-	-	-	-	-	-	-	-	-
PUBLIC ASSEMBLY SPACES	-	-	-	-	-	-	-	-
Auditorium Seating Areas	72	55	70	-	-	-	-	-
Lobbies	72	55	70	-	-	-	-	-
*Locker Rooms	75	55	72	-	-	-	-	-
*Locker and Dressing Rooms	75	55	72	-	-	-	-	-
*Toilets - Public (light)	75	55	72	-	-	-	-	-
*Toilets - Public (heavy)	75	55	72	-	-	-	-	-
*Toilets - Private (Continuous)	75	55	72	-	-	-	-	-
*Toilets - Private (Intermittent)	75	55	72	-	-	-	-	-
*shower Rooms	75	55	72	-	-	-	-	-
Janitor, Trash, Recycle	75	55	60	-	-	-	-	-
-	-	-	-	-	-	-	-	-
RETAIL	-	-	-	-	-	-	-	-
Sales	72	52	70	30	-	-	-	-
Malls Common Areas	72	52	20	-	-	-	-	-
Barber Shop	72	55	70	-	-	-	-	-
Beauty and Nail Salons	72	55	70	-	-	-	-	-
*Commercial Laundry	77	55	68	-				
-	-	-	-	-	-	-	-	-
ENTERTAINMENT	-	-	-	-	-	-	-	-
Game Arcades	72	55	70	-	-	-	-	-
Stages, Studios	72	55	70	-	-	-	-	-
*Ticket Booths	72	55	70	-	-	-	-	-
Indoor Coaster	74	55	65	-				
Dark Ride	74	55	70	-	-	-	-	-
Ride/Gaming Electronics	72	55	65	-	-	-	-	-
Load/Unload	74	55	20	-	-	-	-	-
Maintenance Bay	75	55	68	-	-	-	-	-
Lobbies - Theater	72	55	70	-	-	-	-	-
Queue / Pre-Show	74	55	20	-				
Stages, Studios	72	55	70	-	-	-	-	-
Ticket Booths	72	55	70	-	-	-	-	-
Indoor Plaza	72	55	68	-	-	-	-	-

4. Outdoor Air Ventilation

3.4.1. The 2022 California Building Energy Efficiency (title-24) Code typically identifies maximum space occupant load (persons per 1000 square feet) and where not otherwise identified occupancy will be based on counts based on seating/furniture layouts (and as directed by Owner), subject to approval by authority having jurisdiction.

3.4.2. Outside air quantities will be per 2022 California Building Energy Efficiency (Title-24) Code

5. Building Occupancy, HVAC System Schedules, Ventilation and Demand Ventilation

HVAC systems located in office areas only during normal business hours will employ a BAS-driven occupancy override system (including maximum or minimum temperature and humidity level control) and will include night operation (setback). HVAC systems serving areas anticipated to be in-service 24-hours a day / 7 day a week will be monitored by the BAS for temperature and humidity levels.

3.5.1. Lobbies, dining areas and function space air handling units will be equipped with code required demand-controlled ventilation. Outdoor air intake dampers will be modulated by space carbon dioxide (CO_2) sensors and will also employ a BAS-driven occupancy override system (including maximum or minimum temperature and humidity level control) for - occupied operation (setback).

TABLE 120.1-A– Minimum Ventilation Rates

Occupancy Category	Total Outdoor Air Rate[1] R_t (cfm/ft²)	Min Ventilation Air Rate for DCV R_a (cfm/ft²)	Air Class	Notes
Educational Facilities				
Daycare (through age 4)	0.21	0.15	2	
Daycare sickroom	0.15		3	
Classrooms (ages 5-8)	0.38	0.15	1	
Classrooms (age 9 -18)	0.38	0.15	1	
Lecture/postsecondary classroom	0.38	0.15	1	F
Lecture hall (fixed seats)	-	0.15	1	F
Art classroom	0.15		2	
Science laboratories	0.15		2	
University/college laboratories	0.15		2	
Wood/metal shop	0.15		2	
Computer lab	0.15		1	
Media center	0.15		1	A
Music/theater/dance	1.07	0.15	1	F
Multiuse assembly	0.5	0.15	1	F

Table 2:. Minimum Ventilation Rates

Occupancy Category	Total Outdoor Airflow Rate[1] R_t cfm/ft²	Min Ventilation Air Rate for DCV R_a (cfm/ft²)	Air Class	Notes
Food and Beverage Service				
Restaurant dining rooms	0.5	0.15	2	
Cafeteria/fast-food dining	0.5	0.15	2	
Bars, cocktail lounges	0.5	0.2	2	
Kitchen (cooking)	0.15		2	
General				
Break rooms	0.5	0.15	1	F
Coffee Stations	0.5	0.15	1	F
Conference/meeting	0.5	0.15	1	F
Corridors	0.15		1	F
Occupiable storage rooms for liquids or gels	0.15		2	B
Hotels, Motels, Resorts, Dormitories				
Bedroom/living room	0.15		1	F
Barracks sleeping areas	0.15		1	F
Laundry rooms, central	0.15		2	
Laundry rooms within dwelling units	0.15		1	
Lobbies/pre-function	0.5	0.15	1	F
Multipurpose assembly	0.5		1	F
Office Buildings				
Breakrooms	0.5	0.15	1	
Main entry lobbies	0.5	0.15	1	F
Occupiable storage rooms for dry-materials	0.15		1	
Office space	0.15		1	F
Reception areas	0.15		1	F
Telephone/data entry	0.15		1	F
Miscellaneous Spaces				
Bank vaults/safe deposit	0.15		2	F
Banks or bank lobbies	0.15		1	F
Computer (not printing)	0.15		1	F
Freezer and refrigerated spaces (<50oF)	-		2	E
General manufacturing (excludes heavy industrial and process using chemicals)	0.15		3	

Table 2:. Minimum Ventilation Rates (cont/d)

Occupancy Category	Total Outdoor Airflow Rate[1] R_t cfm/ft²	Min Ventilation Air Rate for DCV R_a (cfm/ft²)	Air Class	Notes
Pharmacy (prep. Area)	0.15		2	
Photo studios	0.15		1	
Shipping/receiving	0.15		2	B
Sorting, packing, light assembly	0.15		2	
Telephone closets	0.15		1	
Transportation waiting	0.5	0.15	1	F
Warehouses	0.15		2	B
All others	0.15		2	
Public Assembly Spaces				
Auditorium seating area	1.07	0.15	1	F
Places of religious worship	1.07	0.15	1	F
Courtrooms	0.19	0.15	1	F
Legislative chambers	0.19	0.15	1	F
Libraries (reading rooms and stack areas)	0.15		1	
Lobbies	0.5	0.15	1	F
Museums (children's)	0.25	0.15	1	
Museums/galleries	0.25	0.15	1	F
Residential				
Common corridors	0.15		1	F
Retail				
Sales (except as below)	0.25	0.2	2	
Mall common areas	0.25	0.15	1	F
Barbershop	0.4		2	
Beauty and nail salons	0.4		2	
Pet shops (animal areas)	0.25	0.15	2	
Supermarket	0.25	0.2	1	F
Coin-operated laundries	0.3		2	
Sports and Entertainment				
Gym, sports arena (play area)	0.5	0.15	2	E
Spectator areas	0.5	0.15	1	F
Swimming (pool)	0.15		2	C

Table 2:. Minimum Ventilation Rates (cont/d)

Occupancy Category	Total Outdoor Airflow Rate[1] R_t cfm/ft²	Min Ventilation Air Rate for DCV R_a (cfm/ft²)	Air Class	Notes
Swimming (deck)	0.5	0.15	2	C
Disco/dance floors	1.5	0.15	2	F
Health club/aerobics room	0.15		2	
Health club/weight rooms	0.15		2	
Bowling alley (seating)	1.07	0.15	1	
Gambling casinos	0.68	0.15	1	
Game arcades	0.68	0.15	1	
Stages, studios	0.5	0.15	1	D, F

General footnotes for Table 120.1-A:

[1] R_t is determined as being the larger of the area method and the default per person method. The occupant density used in the default per person method is one half of the maximum occupant load assumed for egress purposes in the CBC.

Specific Notes:

A – For high-school and college libraries, the values shown for "Public Assembly Spaces – Libraries" shall be used.

B – Rate may not be sufficient where stored materials include those having potentially harmful emissions.

C – Rate does not allow for humidity control. "Deck area" refers to the area surrounding the pool that is capable of being wetted during pool use or when the pool is occupied. Deck area that is not expected to be wetted shall be designated as an occupancy category.

D – Rate does not include special exhaust for stage effects such as dry ice vapors and smoke.

E – Where combustion equipment is intended to be used on the playing surface or in the space, additional dilution ventilation, source control, or both shall be provided.

F – Ventilation air for this occupancy category shall be permitted to be reduced to zero when the space is in occupied-standby mode.

Table 2:. Minimum Ventilation Rates (cont/d)

6. Building Envelope:

3.6.1. The 2022 California Building Energy Efficiency (Title-24) Code has the following building envelope prescriptive requirements for each of the different building construction elements (fenestration, walls, roof, etc.).

3.6.2. Building envelope will comply with 2022 California Building Energy Efficiency (Title-24) Code minimum requirements or the output of building performance calculations. The New Zoo at Elk Grove falls into California Building Climate Zone 12.

				Climate Zone															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Envelope	Maximum U-factor	Roofs/ Ceilings	Metal Building	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041	0.041
			Wood Framed and Other	0.034	0.034	0.034	0.034	0.034	0.049	0.049	0.049	0.034	0.034	0.034	0.034	0.034	0.034	0.034	0.034
		Walls	Metal Building	0.113	0.061	0.113	0.061	0.061	0.113	0.113	0.061	0.061	0.061	0.061	0.061	0.061	0.061	0.057	0.061
			Metal-framed	0.060	0.055	0.071	0.055	0.055	0.060	0.060	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055	0.055
			Mass Light[1]	0.196	0.170	0.278	0.227	0.440	0.440	0.440	0.440	0.440	0.170	0.170	0.170	0.170	0.170	0.170	0.170
			Mass Heavy[1]	0.253	0.650	0.650	0.650	0.650	0.690	0.690	0.690	0.690	0.650	0.184	0.253	0.211	0.184	0.184	0.160
			Wood framed and Other	0.095	0.059	0.110	0.059	0.102	0.110	0.110	0.102	0.059	0.059	0.045	0.059	0.059	0.059	0.042	0.059
		Floors/ Soffits	Raised Mass	0.092	0.092	0.269	0.269	0.269	0.269	0.269	0.269	0.269	0.269	0.092	0.092	0.092	0.092	0.092	0.058
			Other	0.048	0.039	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.071	0.039	0.071	0.071	0.039	0.039	0.039
	Roofing Products	Low-sloped	Aged Solar Reflectance	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63	0.63
			Thermal Emittance	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75	0.75
		Steep-Sloped	Aged Solar Reflectance	0.20	0.25	0.20	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25
			Thermal Emittance	0.75	0.80	0.75	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
	Air Barrier			REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ	REQ
	Exterior Doors, Maximum U-factor		Non-Swinging	0.50	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	1.45	0.50
			Swinging	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70	0.70

Table 3:. Perspective Envelope Criteria for Nonresidential Buildings

				Climate Zone															
				1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Envelope	Fenestration	Vertical	Area-weighted Performance Rating	**Fixed Window**															
				Max U-factor	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.36	0.34	0.36	0.34	0.34	0.34	0.34	0.34	0.36
				Max RSHGC	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.25	0.22	0.25	0.22	0.22	0.22	0.22	0.22	0.25
				Min VT	0.42															
				Curtainwall or Storefront																
				Max U-factor	0.38	0.41	0.41	0.41	0.41	0.41	0.38	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41	0.41
				Max RSHGC	0.25	0.26	0.26	0.26	0.26	0.26	0.25	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26	0.26
				Min VT	0.46															
				Operable Window																
				Max U-factor	0.46															
				Max RSHGC	0.22															
				Min VT	0.32															
				Glazed Doors																
				Max U-factor	0.45															
				Max RSHGC	0.23															
				Min VT	0.17															
			Max WWR%	40%																

			All Climate Zones			
			Glass, Curb Mounted	Glass, Deck Mounted	Plastic, Curb Mounted	Tubular Daylighting Devices (TDDs)
Skylights	Area-Weighted Performance Rating	Max U-factor	0.58	0.46	0.88	0.88
		Max SHGC	0.25	0.25	NR	NR
		Min VT	0.49	0.49	0.64	0.38
		(Min VT_{vis} for TDDs)				
	Maximum SRR%		5%			

Table 3:. Perspective Envelope Criteria for Nonresidential Buildings (cont'd)

7. Building Infiltration, Exfiltration:

3.7.1. Building load calculations will include an infiltration rate based on 0.08 CFM of infiltration air per square foot of above grade exterior walls. Entrance doors will use an infiltration rate of 1.75 CFM per square foot.

8. Space Pressurization Relationships:

3.8.1. The building will have an overall positive pressure relationship to the exterior, or neutral if required by specific codes. Certain internal spaces will be at a slight negative pressure relative to adjacent spaces. In general, the relative pressure relationships will be from clean spaces to 'dirty' or utilitarian spaces. Space pressurization will be achieved utilizing airflow offset, in lieu of actual measurement of space pressures.

4. Sustainability and Energy Efficiency

1. This project will be pursuing LEED Gold certification for Tier 1 buildings. Consideration will be given to applicable energy conservation technologies as allowed by project budget constraints.

2. HVAC-specific sustainable design opportunities planned include:

4.2.1. Variable Air Volume Systems

4.2.2. Variable Frequency Drive on equipment where applicable

4.2.3. Outside Air Delivery Monitoring (demand control ventilation)

4.2.4. Premium Electric Motors

4.2.5. Occupant controlled equipment (provide occupancy sensor which switch room modes to unoccupied if no one is present.)

4.2.6. Low-level Building Automation System [BMS] (For Common Areas, Back-of House and Admin/Support spaces)

5. HVAC Systems

1. **The recommended HVAC approach for the buildings that require air conditioning is packaged air-cooled heat pump systems.** The sizes of the systems are identified in Appendix A and B.

2. The following HVAC systems were considered for the project and were either proposed or eliminated based on the justifications noted hereunder:

i. Water-Cooled Chilled Water:

1. Eliminated due to high first cost and water consumption requirements.

ii. Air-Cooled Chilled Water System:

1. Viable option however this system has high first cost and limitations on the equipment capacities allowed by the California Building Energy Efficiency Code.

iii. Ground-Loop Water Source Heat Pump:

1. Open Loop:

a. Eliminated as it will require an existing open body of water such as a lake.

2. Closed Loop:

b. This system is the recommended system for the following reasons:

i. Year-round ground constant temperature between 60-65 °F

ii. The availability of open areas where sufficient number of vertical bores could be located for the underground piping loops.

iii. System has high operating energy efficiency (16 EER)

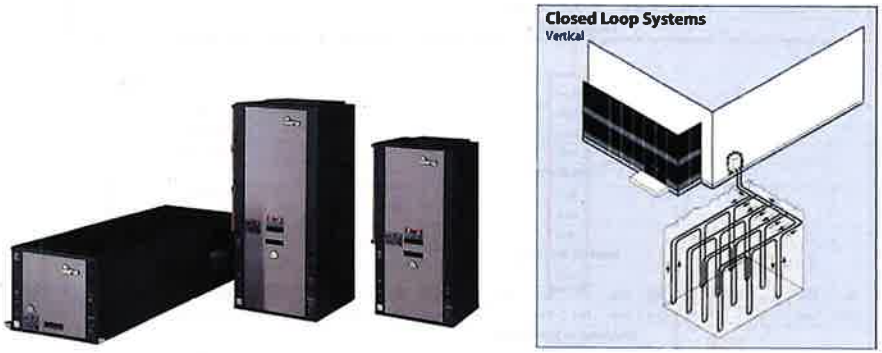


Figure 2: Packaged Ground-Loop Waster Source Heat Pump Units and Vertical Ground Loop Piping Layout

iv. Variable Refrigerant Flow (VRF):

1. Air-Cooled:

a. Viable option however the system has lower efficiency than GSHP.

2. Water-Cooled.

a. Eliminated due to high water consumption requirements.

v. DX Units:

1. Rooftop Packaged DX Units:

a. Packaged rooftop units provide the convenience of having the unit located on the roof of the building with the supply and return air ducted into the building. No building interior floor space is required for the air-conditioning equipment with the use of rooftop units. In addition, packaged rooftop units provide a single location for equipment serviceability since all the unit components, such as compressor, condenser and evaporator coils, fans and motors, economizers and controls are all packaged within the unit enclosure.

b. Viable option however the system has lower efficiency than GSHP.

2. Ductless Split-Type Room A/C Units:

a. Ductless split-type room A/C units offer the convenience of providing dedicated air-conditioning (cooling/heating) for individual room that are either stand-alone rooms which do not have adjacent A/C units that could serve these rooms, or these rooms have special temperature control requirements and require air-conditioning at times when the main A/C systems are not in operation due to building occupancy schedules and off-hours as dictated by the building energy saving measures.

b. Viable option however the system has lower efficiency than GSHP.

vi. Evaporative Cooling Units:

a. Eliminated due to high water consumption requirements.

6. Ductwork

1. Supply, return, toilet and general exhaust ductwork will be constructed of galvanized sheet metal, constructed in accordance with SMACNA *HVAC Duct Constructions Standards*. Transverse and longitudinal joints in HVAC ductwork will be sealed. Pressure testing will be performed on 10% of low-pressure ductwork.

2. Exhaust ductwork for damp or moist areas (dishwasher exhaust) will be aluminum construction.

3. Kitchen hood exhaust ductwork will be welded black or stainless-steel construction and installed in compliance with the *California Mechanical Code*.

4. Flexible ductwork will be pre-insulated UL-181 *Factory-Made Air Ducts and Air Connectors* Class 1 for air ducts and air connectors having a flame-spread index of not over 25 and a smoke-developed index of not over 50 when tested in accordance with UL-723/ ASTM E84/NFPA 255 *Test for Surface Burning Characteristics of Building Materials*.

5. Flexible ductwork will be installed in lengths not exceeding 8 feet.

6. Balancing dampers will be provided at branch take-offs. Fire and fire/smoke dampers will be provided at penetrations of fire/smoke walls (that provide both area and fire-rated separations) and in penetrations of two-hour fire-rated shafts.

7. Firestopping will be provided where ductwork penetrates walls, floors, partitions, ceiling assemblies, etc. designated to limit spread of fire and smoke. Through penetration firestop systems to have been tested in accordance with UL-1479/ASTM E814 *Fire Tests of Penetration Firestops* and to be current UL-listed products of manufacturer with listing available on UL Online Certification Directory.

8. Ductwork will be sized:

Supply - Medium Pressure	0.2" per 100 ft. / 1,750 FPM up to 4,500 CFM 1,750 to 2,000 FPM above 4,500 CFM
Supply - Low Pressure	0.08" per 100 ft. / 1,500 FPM
Return - with return air fan	0.1" per 100 ft. / 1,200 FPM
Return - without return air fan	0.08" per 100 ft. / 1,000 FPM
Exhaust	0.10" per 100 ft. / 1,000 FPM
Grease exhaust	500 FPM minimum
Transfer ductwork	300 FPM maximum

7. Piping

1. Refrigerant piping will be Type ACR copper. Piping will be sized per the DX equipment manufacturer's recommendations.

8. Insulation

1. Supply, return and all outside air duct systems, including all horizontal ductwork and risers from DOAS systems, will be insulated.

2. Duct insulation to have a nominal density of three pounds per cubic foot with thermal conductivity of not more than 0.23 at 75°F mean temperature. Determination of interior and exterior is based on envelope thermal and moisture barrier.

   8.2.1. Interior duct insulation to be fiberglass wrap with foil scrim Kraft (FSK) vapor retarder.

   8.2.2. Exterior duct insulation to be cellular glass with aluminum jacketing or pre-insulated double Wall ductwork.

3. Pipe insulation to be the minimum thickness indicated in Table 1 below:

Minimum Pipe Insulation Thickness Table				
FLUID	Insulation Thickness based on Pipe Diameter (Internal)		All External Piping	Type of Insulation
	≤ 1.5 Inches	≥ 1.5 Inches		
Refrigerant	1"	1"	1"	Flexible Elastomeric (Exterior: Aluminum Jacketing)
Condensate Drain	1/2"	1/2"	1"	Flexible Elastomeric (Exterior: Aluminum Jacketing)

TABLE 1: MINIMUM PIPE INSULATION SPECIFICATION TABLE

9. Air Devices

1. Variable air volume (VAV) air terminal devices will be internally lined and pressure independent type. Terminal devices will be provided with electric heaters.

FIGURE 23: EXAMPLE: VARIABLE AIR VOLUME TERMINAL

2. Grilles, registers and diffusers will be constructed of aluminum. To allow testing adjusting and balancing, each grille, register and diffuser will be provided with opposed blade or damper at branch take-off.

3. Linear slot-type supply diffusers/return grilles will be integrated into building architecture and interior design reflected ceiling plans for front-of-house and public areas. Quantity and type will be refined as design of front-of-house spaces progresses.

4. Sound attenuators may be used on various systems as deemed necessary by the design and/or Project Acoustical Consultant.

10. Sound and Vibration Control

1. The design will target the following average noise levels created by the HVAC systems. Noise levels do not include noise from equipment, hoods, and personnel located within spaces. Additional requirements of the systems are addressed by the Project Team Acoustical Consultant.

- Theaters NC = 20 – 25
  - Control Room (Sound) NC ≤ 25
  - Control Room (Lighting) NC ≤ 30
- Office Spaces NC = 35 - 40
- Restrooms: NC = 40
- Retail: NC = 40-50
- Restaurants: NC = 45
- Kitchen NC = 55
- Corridors/Halls and Lobbies: NC = 40-45
- Service and Support Areas: NC = 40-45
- Electrical/Mechanical Rooms: NC ≤ 70

2. These noise criteria values are considered average and should not require widespread sound attenuation devices on mechanical equipment. Sound attenuators may be required in ductwork for large air handling units located above or adjacent to sensitive spaces, or in some air terminal boxes with higher than average entering air static pressures.

3. If venturi-type air valves are used for noise sensitive spaces, then sound attenuators will be required.

4. Vibration Isolation:

   10.4.1. Fans, and other rotating equipment will be isolated from structure with appropriate vibration isolation. This will include spring isolators, spring hangers and inertia bases, by application.

5. Piping connected to rotating equipment will be isolated from equipment with flexible piping connections.

6. Duct borne sound generated by air handling equipment can be reduced by use of lined ductwork or duct sound attenuators.

11. Building Pressure Relationships

1. Conditioned levels of the buildings will have overall neutral pressure relationship to exterior and dedicated outdoor air units (DOAS) and air handling unit relief/exhaust air balance will make-up for exhaust air quantities.

2. Restrooms, kitchens, and janitor closets will be a negative pressure with respect to adjacent spaces. Corridors will be maintained at a slight positive pressure with respect to atmospheric pressure. Building will have an overall neutral pressure relationship to the exterior.

12. Air Handling Unit Requirements

1. All air handling units, components and supporting structures exposed to the elements will be made with corrosion resistant materials. External protective coating spray will be applied regularly where applicable to resist corrosion.

2. All air handling units with outside air intakes will have airflow monitoring stations that will alarm when the outside airflow is 10% lower or higher than the required flow rate. The following spaces will have carbon dioxide sensors to alarm if carbon dioxide levels are 10% beyond what is expected, for example all rooms with an occupant density greater than 25 people per 3,225 square feet.

3. Air handling units will be provided with MERV 8 (30%) and MERV 13 (80%) pre-filters.

4. All air handlers will be provided with supplementary electric heat.

5. Humidity control of high latent areas will be achieved via reheat coils. Reheat coils will be electric.

6. Reheat coils will also be utilized wherever displacement ventilation is used to reach the desired supply temperature of the system. Reheat coils will be electric.

7. For pre-fab buildings such as attraction buildings the preferred AHU location is in a mechanical room. Where it is not possible or practical to locate units inside, they will be located outside on the roof of the building.

8. Since restaurants have so much equipment on the roof (restroom, dishwasher, and grease exhaust fans, etc.) it is acceptable for AHU's to be rooftop mounted or enclosed in a penthouse located on the roof level.

9. For small buildings such as retail and maintenance buildings AHU's will be rooftop mounted or enclosed in a penthouse located on the roof level.

10. Air-side economizers will be required by.

13. Building Automation and Controls

1. Temperature control/building automation will be accomplished utilizing a complete Building Automation System (BAS) utilizing Direct Digital Controls (DDC) in accordance with drawings, specifications and intent of the design. The BAS system shall include expansion modules to incorporate the integration of Fire Alarm, Security Access and Lighting Control Systems.

2. The control sequences will be clearly indicated as a part of the construction documents clarifying temperature, humidity, and pressure related set points, schedules, and interoperability with each system.

3. The BAS shall comply with the latest ANSI/ASHRAE Standard 135, BACnet. This system is to control all mechanical equipment, including all unitary equipment such as VAV boxes, heat pumps, fan-coils, AC units, etc. and all air handlers, boilers, chillers, and any other listed equipment using native BACnet-compliant components.

4. All components not specifically indicated or specified, but necessary to make the system function within the intent of the specification, are to be included.

5. All electrical products shall be listed and labeled to comply with UL Standards.

6. All control wiring shall be installed in conduit.

7. Field Enclosures: Enclosures shall conform to the local requirements for exterior rating. Finish color shall be of the manufacturer's standard, unless otherwise stated. Damaged surfaces shall be repaired and/or refinished to its original condition.

8. Actuation of dampers, control valves, and air terminals will be accomplished utilizing electronic actuation for all devices. The building automation system and its associated equipment will be connected to standby power, with a plug-in UPS device provided where required by operations.

9. The system will utilize a personal computer with full color graphics.

10. Any control devices subject to corrosion, such as in a wet pump room, shall be provided with appropriate corrosion protection.

11. Several other non-HVAC systems will have their own dedicated control systems, including but not limited to lighting, security, etc. The HVAC control system network should be used to provide scheduling and programming of these non-HVAC control systems.

14. Equipment and Materials

1. Quality Level

14.1.1. The intended quality level of equipment and materials for this project shall be: Commercial.

14.1.2. Commercial – High level of quality for equipment and materials, reflecting heavy daytime use and light nighttime use. This quality level reflects the expectation of the contractors to provide competitively priced equipment and systems which meet the intent of the specifications. The installation approach should be focused on balancing cost-competitiveness with ease of maintenance.

14.1.3. Quality Level Definitions range from the highest expected quality level down to cost competitive quality levels.

2. Proposed Manufacturers List of Major Equipment.

14.2.1. The following represents the expected quality level by manufacturer of several major equipment categories.

Commercial Quality Level – Manufacturer's List

Equipment	Manufacturer(s)
Air Handling Units	Temtrol, Trane, York, Carrier
Air Terminal Boxes	Envirotech, Titus, Trane, York, Carrier
Air Valves	Phoenix, Siemens
Exhaust Fans	Greenheck, Cook,
Control Systems / BAS	Trane, JCI, Delta, Siemens, Honeywell

3. Redundancy and Reliability.

14.3.1. The level of redundancy for this project will be as indicated below.

14.3.2. The Redundancy levels are described in terms of system capacity or equipment quantity versus the actual loads. Redundancy also includes spare or reserve capacity included in the base design estimates to hedge against changes late in the design phase, or future owner renovations.

14.3.3. The Reliability level is described in terms of Continuous Availability, or percent availability of capacity designed into the system. This is achieved by providing additional pathways for air and water, supplemental isolation valves, and headered equipment to allow for unexpected failures or unplanned maintenance to occur in parts of the system while the other parts of the system continue to operate and meet the loads.

Redundancy Definitions:

N = Base capacity meeting the expected peak load

N+1 = Quantity of equipment needed for base capacity plus one extra unit.

Firm Capacity = Resulting system capacity (at peak load) if one piece of equipment failed or was down for maintenance. An 80% Firm Capacity would equate to the system capacity being able to meet 80% of the load on a 'design day' (hottest or coldest) with one piece of equipment down.

14.3.4. The following table provides a comparison of various Reliability levels.

Reliability Table

Reliability Level	Availability %	Downtime per year	Redundancy Comments
Normal *(Commercial)*	98%	7.3 days	N, Life safety backup
Enhanced *(Institutional)*	99%	3.6 days	N+1 for most equipment, with partial backup.
Robust *(Industrial)*	99.9% ("three nines")	8.7 hours	N+1 for most systems, with full emergency backup
High- *(Mission Critical)*	99.99% ("four nines")	52.6 minutes	N+2, dual pathways, concurrent maintenance, full backup
Highest – *(Mission Critical)*	99.999% ("five nines")	5.2 minutes	2N with full backup

14.3.5. The following table provides a preliminary indication of expected levels of redundancy in the various project systems.

Expected System Redundancy Table

Equipment or System	Level of Redundancy	Firm Capacity	Reliability
Cooling System	N	n/a	Normal
Heating System	N	n/a	Normal
Exhaust System	N	0%	Normal
Special Exhaust	N+1	100%	Robust

4. Value Engineering Process Management.

14.4.1. Contractor's participation in the 'value engineering' process to reduce the construction cost of the project is anticipated by the owner. The easiest path to reducing costs is to reduce the quality level of equipment and materials below the specified level. The following is a partial list of items which may or may not be considered during the value engineering process to reduce construction costs. If the item has a Yes, then the item will be open for discussion and evaluation of the proposed credit. If the item has a No, then it will not be considered.

Mechanical Value Engineering Items

Equipment or System	Considered for VE
Substitute duct board for galvanized duct	No
Reduce mechanical equipment size or capacity	No
Substitute black iron for stainless kitchen exhaust ductwork	Yes
Substitute fire wrap for rigid insulation for kitchen exhaust ductwork	Yes
Substitute fiberglass blanket for rigid duct insulation in exposed areas	Yes
Delete fan-coil unit control connection to BAS	Yes
Substitute alternate duct sealant for fab and mastic	Yes
Substitute plenum rated cable for BAS control wiring	Yes
Delete fire/smoke damper annunciation devices in ceiling	Yes

15. Occupancy Assumptions

1. Time of Day Occupancy

15.1.1. The HVAC control system shall be programmed to have an Occupied mode from 6AM – 8PM, then switchover to Unoccupied mode. The Unoccupied mode operation shall consist of expanded temperature ranges (18.3°C-26.67°C) for temperature sensors.

15.1.2. It is common operating practice that HVAC systems shall be in Occupied mode continuously to meet the ventilation requirements of the guests during the day, and the O&M staff during the night time hours.

2. Occupant Density

15.2.1. Based upon the programming documents, the occupant density shall be considered normal.

15.2.2. Based upon the programming documents, the occupant density shall be considered very high for several spaces, requiring additional levels of ventilation.

3. Off-hours HVAC System Operation

15.3.1. The off-hours shall be considered the Unoccupied time period. The system operation would be affected by a reduction or elimination of exhaust fans, reduction of outside ventilation air, and intermittent operation of air handling units to meet expanded temperature ranges of the various spaces in the zone.

16. Operation and Maintenance

1. Expectations of Facility Staff for Operation

16.1.1. The Owner has full-time facility staff for preventive maintenance, so the system operation shall be automatic requiring no user input for normal operation.

16.1.2. The Owner expects to provide facility staff to monitor system operations. The Owner expects the front-end monitoring and control systems to be co-located in a central space where the operations staff can continuously monitor operations and quickly dispatch staff to investigate operational problems.

2. Expectations of Facility Staff for Maintenance

16.2.1. The Owner has full-time facility staff performing preventive maintenance. Direct access to equipment shall be planned for during the installation. Directly accessible unions, isolation valves, disconnects, overhead rails, etc., shall be provided for easy replacement of equipment components including filter changing, pulling coils, lifting motors, replacing/calibrating controls devices, exercising valves, etc.

17. Component Specific Details

1. <u>Food and Beverage</u>

17.1.1. Kitchens

- The kitchen areas will be provided with single-zone VAV packaged DX rooftop units. Kitchen outside air dampers shall be modulated based upon space pressure to maintain the kitchen at a negative pressure.
- Kitchen hood make-up air will be provided with 100% outdoor (filtered) single-zone air variable volume (VAV) packaged DX rooftop units. This pre-conditioned air will be ducted directly to each kitchen hood and will provide approximately 70-80% of the kitchen hood make-up. Heating coils will temper the air up to about 55°F during cold weather. In summer the best practice, resulting from code interpretations, is to cool the make-up air to 67°F.
- Division 23 contractor shall provide kitchen hood and appurtenances. Kitchen hood shall be exhaust only type with front perforated plenum make-up air module.
- The hood fire suppression system shall be provided by the hood manufacturer and be a pre-engineered, liquid agent, cartridge operated type with a fixed nozzle agent distribution network equal to Ansul R-102.
- Kitchen hood exhaust duct insulation shall be fire rated duct wrap capable of maintaining a minimum of a 2-hour fire rating.
- Applicable Codes, Guidelines and Standards: UL-762 Restaurant Exhaust.
- Kitchen exhaust system quantities and discharge configurations to be in accordance with the International Building Code and ASHRAE 62.1.

17.1.2. Dining:

- The indoor dining areas will be served with central station variable air volume air handling units. The air handling units will be located on the roof. Each of the zones will be served with individual VAV boxes linked to temperature sensors within each of the respective areas. Interior seating will be temperature controlled separately from seating along the perimeter of the building. Dining areas generally require large amounts of outdoor air for occupant ventilation.
- The VAV air handling units will provide recirculated and outdoor air for the space, based upon load and occupancy.
- Air curtains will be installed at all openings.
- All diffusers, registers, and grilles shall be constructed of aluminum. Each diffuser, register, and grille shall be provided with an opposed blade damper. Supply diffusers located near kitchen exhaust hoods shall be perforated return type diffusers to allow for air "dumping" and to avoid air balance conflicts with kitchen exhaust hoods.

17.1.3. Food Carts/Kiosks:

- No mechanical scope anticipated in the Food Carts/Kiosks.

2. Restrooms

17.2.1. Standalone restrooms - A central station 100% outside air constant volume air handling unit with preheat and reheat coils will serve the restrooms.

17.2.2. Restrooms Attached to Other Buildings - The exhaust required typically exceeds the amount of air needed to cool the space. The difference in these airflows will be made up from transfer air if it is available. If not available, then the difference will be made up from dedicated air handling units.

17.2.3. Restroom exhaust will be achieved by a roof mounted exhaust fan, connected with sheet metal ductwork to grilles located within the ceiling.

17.2.4. Restroom exhaust system quantities and discharge configurations to be in accordance with the California Building Code and ASHRAE 62.1. The exhaust rate will be 75cfm per fixture.

3. Retail

17.3.1. Large shell retail spaces will be served by multi-zone VAV air handling units. This allows the temperature to be separately controlled by the various retail spaces within one retail building. For smaller retails spaces, a single zone VAV air handling unit can provide heating and cooling. The air handling units will be located on the roof.

17.3.2. Each of the zones will be served with individual VAV boxes linked to temperature sensors within each of the respective areas. Refer to materials document for internal conditions.

17.3.3. The air handling unit will be sized for a higher outdoor air volume than code requires, this will allow for the frequency of doors being opened, or open.

17.3.4. The photo processing area will be served with central station single zone variable air volume air handling units. The air handling unit will be located on the roof.

17.3.5. The photo processing area will be served with a separate roof mounted exhaust fan sized to remove contaminants from laser printers and other equipment in the space.

17.3.6. The buildings will be typically pressurized, and a barometric relief hood will eliminate excess air.

17.3.7. Air curtains will be installed at all front of house openings.

17.3.8. Air Devices: All diffusers, registers, and grilles shall be constructed of aluminum. Each diffuser, register and grille shall be provided with an opposed blade damper. Consideration to the selection of supply diffusers will be given to ensure condensation does not form.

17.3.9. No mechanical scope anticipated in the Retail Vendor Carts/Kiosks.

4. Animal Holding / Support

17.4.1. The animal holding areas that are indicated to be air conditioned will be served by central station variable air volume air handling units. The units will be located outdoors, either on grade or on the roof. Each of the zones will be served with individual VAV boxes linked to temperature sensors within each of the respective areas.

17.4.2. The animal holding areas that are indicated to have fans and radiant heat will be provided with a fan system to deliver a minimum of 6 ACH of ventilation air and electric radiant heaters where the individual animals would sleep.

17.4.3. Animal holding buildings that indicate smoke exhaust will be provided with a fan system to deliver a minimum of 6 ACH throughout the building on emergency power.

17.4.4. Any other areas that are indicated to receive no conditioning will not be provided with any HVAC systems.

17.4.5. The buildings with air conditioning will be typically pressurized, and an exhaust fan or barometric relief will be used to remove excess air.

17.4.6. Fan-coil units are generally required for internal rooms with continuous cooling loads such as electrical rooms and server rooms.

5. General and Support Buildings/Areas

17.5.1. Back of House Areas:

- Back of house areas and control rooms will be served with a central station variable air volume air handling units. Each of the zones will be served with individual VAV boxes linked to temperature sensors within each of the respective areas.

17.5.2. Equipment rooms

- All equipment rooms requiring 24-hour conditioning will be served with fan coil units or floor mounted computer room air conditioners (CRAC). Critical equipment spaces, such as server rooms, will not have permanently installed back-up cooling. The intent is to use portable cooling units and open the doors in the event of a cooling problem.
- No enclosed mechanical/electrical space will be ventilated using unconditioned outdoor air.

17.5.3. Offices

- The general office/support areas will be served with a central station multiple zone variable air volume air handling unit. Each office area will be served with a dedicated VAV boxes linked to temperature sensors within each of the respective areas. The air handling unit will be located on the roof.
- Each of the zones will be served with individual VAV boxes linked to temperature sensors within each of the respective areas. VAV boxes on the perimeter zones will have electric heaters.

17.5.4. Maintenance

- The maintenance areas will be served with central station single zone variable air volume air handling units. The air handling units will be located on the roof. The main maintenance area will be served with a single zone VAV unit connected directly to supply diffusers. The support areas will be served with their own dedicated VAV air handling unit connected to individual VAV boxes linked to temperature sensors within each of the respective areas.
- Dedicated exhaust systems will be included for task related operations. (i.e. welding, etc.)
- The vehicle maintenance area will have a dedicated vehicle exhaust system which can be connected directly to vehicle exhaust systems.

17.5.5. Warehousing and Storage

- Air handling units. The air handling unit will be located on the roof. The main maintenance area will be served with a single zone VAV air handling unit connected directly to supply diffusers. The support areas will be served with their own dedicated VAV air handling unit connected to individual VAV boxes linked to temperature sensors within each of the respective areas.
- Each building will be typically pressurized, and an exhaust fan or barometric relief will be used to remove excess air.

18. Appendix A: Estimated HVAC Loads - Phase 1a and 1b

BLDG #	BLDG Name	Conditioned Yes = heated and cooled via central furnace	Smoke Exhaust?	Cooling tons	Cooling Demand MBH	Heating Demand MBH
101	Guest Services/Restrooms/Ticketing	Yes		16	188	212
101	Retail	Yes		20	236	266
102	Education Entry Restrooms	Yes		2	20	23
103	The Lodge	Yes		80	960	540
104	Events Pavilion	Fans, Radiant Heat				
201	Dwarf Mongoose Care Quarters	Yes		0	5	9
202	Giraffe Feeding Shelter Canopy	Fans, Radiant Heat				44
202	Giraffe Feeding Shelter Sales Room	Yes		1	6	7
203	Beer Garden Restrooms	Yes		3	32	36
204	Beer Service	Yes		1	10	11
205	Beer Service	Yes		1	10	11
206	Cheetah Care Quarters	Fans, Radiant Heat		4	43	36
207	Cheetah View Shelter					28
208	Fennec Fox Care Quarters	Fans, Radiant Heat		1	7	14
209	Lion View Shelter 1	No				52
210	Lion View Shelter 2	No				92
211	Meerkat Care Quarters	Fans, Radiant Heat		0	4	7
212	Rhino View Shelter 1					8
213	Rhino View Shelter 2					14
214	Rhino Encounter Shelter					18
215	Overnight Guest Duplex	Yes		2	22	41
215	Overnight Guest Duplex	Yes		2	22	41
215	Overnight Guest Duplex	Yes		2	22	41
216	Lion Care Quarters	Yes		6	77	144
217	Rhino Care Quarters	Fans, Radiant Heat		9	106	198
218	Giraffe Care Quarters	Yes	Yes	23	276	518
218	Overnight Guest Suite	Yes		3	34	63
219	Hoofstock Care Quarters	Yes		8	101	189
220	Savanna LSS	No		0	0	0
221	Walk In Browse Cooler	Yes		0	0	0
222	Hay Storage	No				10
223	Event Lawn Giraffe Feeding Shelter	No				3

BLDG #	BLDG Name	Conditioned Yes = heated and cooled via central furnace	Smoke Exhaust?	Cooling tons	Cooling Demand MBH	Heating Demand MBH
301	Flamingo LSS	No		0	0	0
302	Flamingo Care Quarters/Brooder	Yes (1,000 SF)		2	24	45
303	Africa Aviary Care Quarters	Yes				12
304	Lvl 1: Vestibule	No		2	21	39
304	Lvl 2: Colobus Care Quarters	Yes		3	36	68
305	Okapi Care Quarters	Fans, Radiant Heat		4	53	99
306	Giant Tortoise Care Quarters	Radiant Heat & Fan		2	26	50
307	Multipurpose Room	Yes		3	40	45
307	Multipurpose Room	Yes		3	40	45
307	Multipurpose Room	Yes		3	40	45
308	Gelada LSS	No		0	0	0
309	Klipsringer/Hyax Holding	Heat		1	10	19
310	Gelada View Shelter 2					30
311	Gelada View Shelter 1					26
312	Gelada Care Quarters	Yes		9	108	203
313	Train Depot	No				
314	Alligator Viewing Shelter 1	No				10
315	Alligator Viewing Shelter 2	No				10
316	Alligator & Sq. Monkey Care Quarters	Heat		3	38	72
317	Squirrel Monkey Viewing Shelter	No				20
318	Parrot Care Quarters	No		1	6	11
319	Play Area Restrooms & Lactation Room	Yes		2	26	29
320	Carousel Pavilion	No				
321	Lemur View Shelter 1	No				16
322	Lemur View Shelter 2	No				20
323	Lemur Care Quarters	Yes		3	38	72
324	Quarantine & Nutrition Center)	plan for extents of		73	880	990
701	Maintence Shed/Shops	Heat (2000 sf				174
703	Containerized Fodder System	Yes				
703	Walk In Browse Cooler	Yes		0	0	0
703	Roof	Fans, Radiant Heat				30

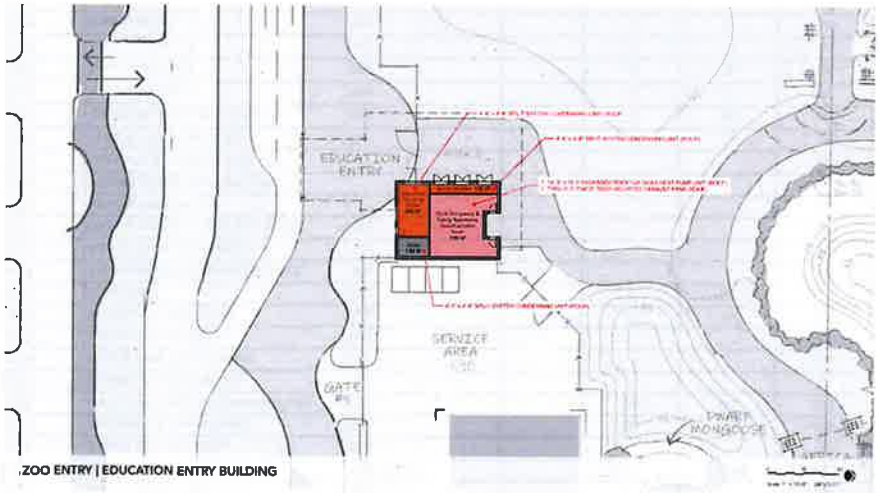
BLDG #	BLDG Name	Conditioned Yes = heated and cooled via central furnace	Smoke Exhaust?	Cooling tons	Cooling Demand MBH	Heating Demand MBH
801	Admin Modular 1	Yes		0	0	0
801	Admin Modular 2	Yes		0	0	0
801	Admin Modular 3	Yes		0	0	0
801	Admin Modular 4	Yes		0	0	0
801	Admin Modular 5	Yes		0	0	0
801	Admin Modular 6	Yes		0	0	0
801	Restrooms - Prefabricated	Yes		3	40	45
802	Animal Staff Modular 1	Yes		0	0	0
802	Animal Staff Modular 2	Yes		0	0	0

19. Appendix B: Estimated HVAC Loads – Full Buildout

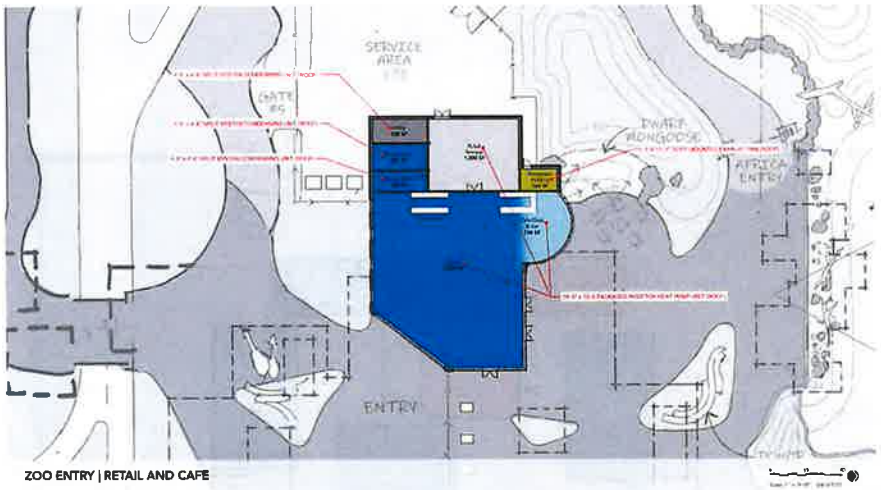
BLDG #	BLDG Name	Conditioned Yes = heated and cooled via central furnace	Smoke Exhaust?	Cooling tons	Cooling Demand MBH	Heating Demand MBH
105	Administration / Staff Support & Offices (2-stories)	Yes		32	380	428
401	Changing Exhibits	Yes				100
401	Otter Care Quarters & LSS	Yes				60
401	Exhibits	Yes		37	446	837
401	Beaver Care Quarters	Yes				22
402	Education & Classrooms	Yes		30	360	405
402	California Deserts Indoor Exhibits	Yes		12	144	270
403	Capybara Care Quarters	Yes				16
404	Grizzly Bear View Shelter					120
405	Bobcat Care Quarters	Yes				20
406	Restrooms - California	Yes		4	43	81
407	Food Kiosk	Yes		1	12	23
408	Big Horned Sheep Care Quarters	Yes				32
409	Rescue & Rehab Facility	Yes				220
410	Grizzly Bear Care Quarters & LSS	Yes				100
501	African Ape Viewing					80
502	Hippo Springs View Shelter					36
503	Hippo River View Shelter					50
504	Food & Restroom Kiosk	Yes		2	19	36
505	Overnight Arrival Building	Yes		7	84	95
505	Accomodation 1	Yes		1	7	14
505	Accomodation 2	Yes		1	7	14
505	Accomodation 3	Yes		1	7	14
505	Accomodation 4	Yes		1	7	14
505	Accomodation 5	Yes		1	7	14
505	Accomodation 6	Yes		1	7	14
505	Accomodation 7	Yes		1	7	14
506	Hippo Care Quarters	Yes		20	240	450
507	Hippo+ Tiger Filtration	area		17	204	383
508	African Ape CQ	Yes		2	22	41
509	Wild Dog / Hyena CQ	Yes		7	89	74
510	Rhino Breeding / Hoofstock CQ	Yes	Yes	11	134	252

BLDG #	BLDG Name	Conditioned Yes = heated and cooled via central furnace	Smoke Exhaust?	Cooling tons	Cooling Demand MBH	Heating Demand MBH
601	Wallace Line Gallery Indoor Exhibits	Yes		38	456	855
601	Komodo Dragon/Red Panda C.Q.	Yes				28
602	Clouded Leopard Care Quarters	Yes				60
603	Tiger View Shelter	Fans & Radiant Heat				96
604	Tiger Care Quarters	Yes				70
605	Aviary Care Quarters 1	Yes				16
606	Restrooms - Asia	Yes		2	24	45
606	Aviary Viewing Shelters	Yes				58
606	Food Kiosk	Yes		1	12	23
607	North Water Recovery			0	0	0
608	Asian Ape View Shelter	Fans & Radiant Heat				40
609	Asian Ape Care Quarters	Yes				150
610	Cassowary Care Quarters	Yes		1	7	14
611	Australian Aviary Care Quarters	Yes				6
612	Clouded Leopard View Shelter	Fans & Radiant Heat				28
702	Maintence Shed/Shops	Fans & Radiant Heat				170
705	Greenhouse 2	Yes		8	91	171
706	Greenhouse 1	Yes		8	91	171
707	Event Storage	No				76

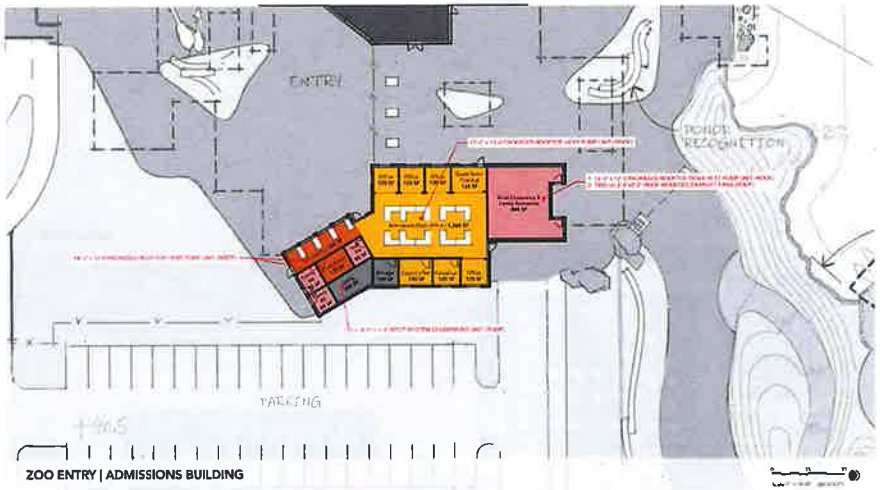
20. Appendix C: Mechanical Equipment Space Requirements



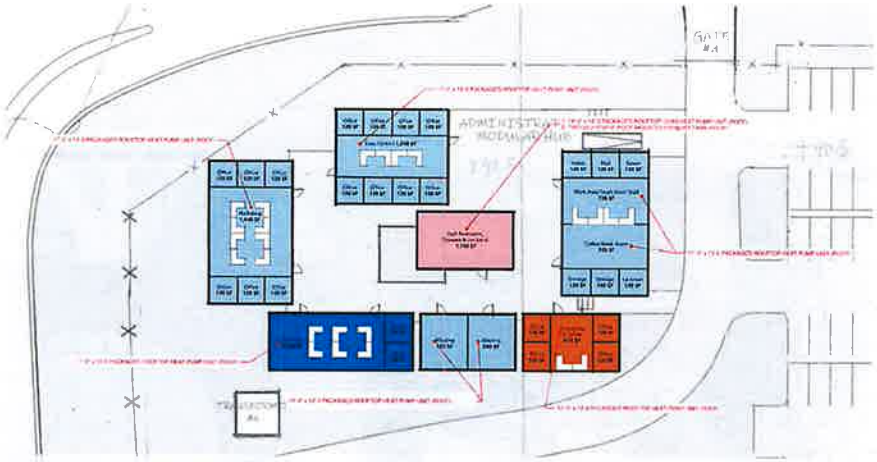
ZOO ENTRY | EDUCATION ENTRY BUILDING



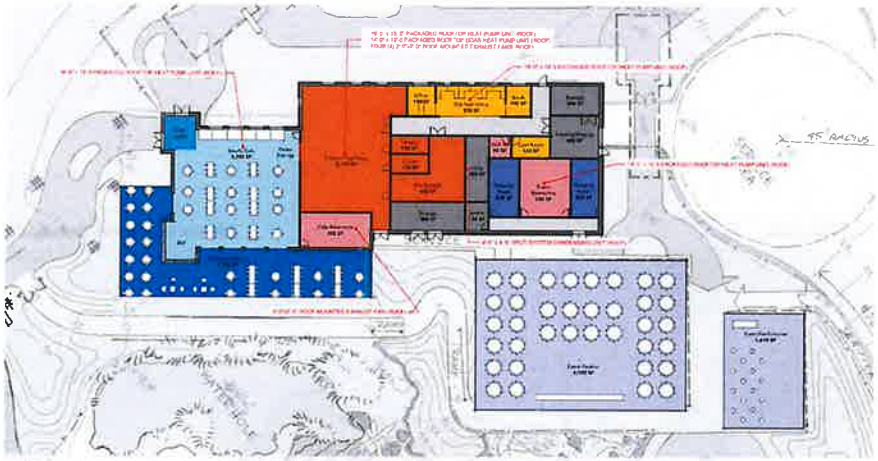
ZOO ENTRY | RETAIL AND CAFE



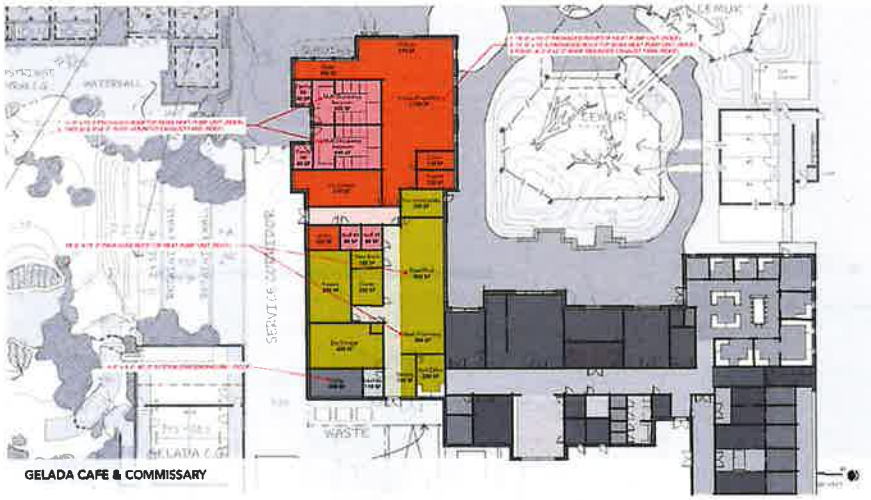
ZOO ENTRY | ADMISSIONS BUILDING



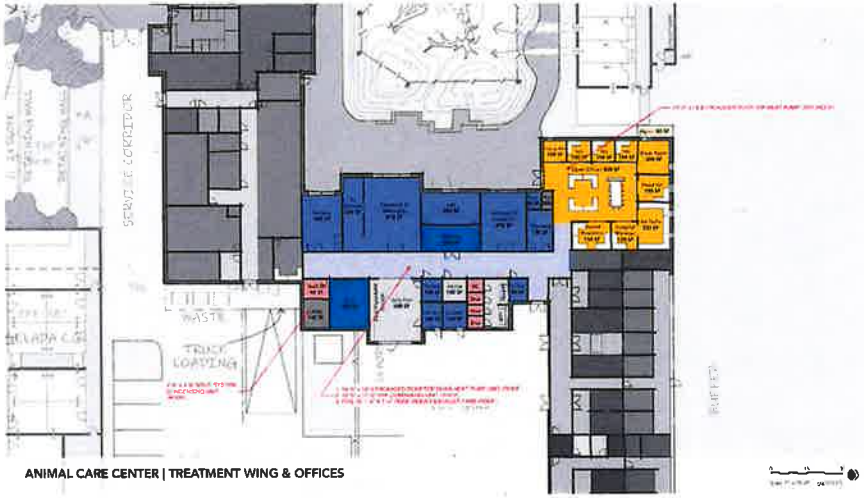
ADMINISTRATION | MODULAR COMPLEX



GIRAFFE CAFE



GELADA CAFE & COMMISSARY



ANIMAL CARE CENTER | TREATMENT WING & OFFICES

ANIMAL CARE CENTER | ANIMAL HOLDING & QUARANTINE | MODULAR OFFICE

ELECTRICAL ENGINEERING
BASIS OF DESIGN
SCHEMATIC DESIGN SUBMISSION
OCTOBER 6, 2023
FOR PRICING
NEW ZOO AT ELK GROVE

1. Executive Summary

1.1. Electrical systems for the New Zoo at Elk Grove includes a utility provided medium voltage loops normal power distribution, emergency power generation and distribution, interior and exterior lighting, centralized lighting control, support of LSS systems, grounding, surge suppression and a substantial amount of photo voltaics.

2. Applicable Codes, Guidelines and Standards

2.1. Design will conform to the following Codes, Standards and Guidelines. Where differences arise between any Code, Standard or Guideline, Codes shall prevail. In all cases, where an edition number is not indicated, the current accepted edition will be used.

2.1.1. 2022 California Building Code

2.1.2. 2022 California Energy Code

2.1.3. 2022 California Fire Code

2.1.4. 2022 California Electrical Code

2.1.5. IESNA Lighting Handbook, 10th Edition

2.1.6. 2015 NFPA 101 (Life Safety Code)

2.1.7. Local Decrees, Ordinances, Standards, and Acts

2.2. Equipment selections will be from manufacturers whose products comply will current industry accepted design and testing standards as will be based on Zoo preferred manufacturers whenever possible.

3. Design Criteria

3.1. Conceptual overall normal building power demand for the zoo is anticipated to be roughly 5 MVA at full build out. A summary of the loads is presented in the Appendix.

3.2. Conceptual overall emergency building power demand for this land is anticipated to be 1.1 MVA.

3.2.1. Systems anticipated to be on emergency that are included in the above calculation include the following; select components of Aquatic Life Support Systems (LSS) systems, select food service coolers and freezers, fire alarm system components, select computer systems, IT racks, and emergency lighting. Elevators may be placed on emergency power if required for emergency building egress.

3.3. Lighting levels will be in accordance with recommendations of the Illuminating Engineering Society (IES) and shall be generally as indicated below. Areas designed by the Lighting Designer will have maintained levels as selected by that designer.

Area	Maintained Footcandles
General Circulation	5-15
Offices	30-40
Meeting Rooms	30-40
Video Conference Rooms	50-60
Toilet and Locker Rooms	10-20
Kitchens	50-60
Mechanical and Electrical Rooms	20-30
Low Voltage System Rooms	30-40
Elevator Machine Rooms	25-30
Elevator Pits	20-30
Exterior Walkways	1-3
Exterior Entrances	5-15
Loading Docks	10-20

4. Electrical Quality Level

4.1. The intended quality level of this project shall be: Commercial

4.2. Quality Level Definitions ranging from the highest expected quality level down to cost competitive quality levels:

Industrial – Highest level of quality for equipment and materials. This level reflects the expectation for a lot of custom or special-built equipment, heavy gauge materials, long life cycle duty with zero unscheduled downtime.

Institutional – Very High level of quality for equipment and materials, reflecting heavy continuous use for a very long life cycle. The Owner expects very little unscheduled system downtime for up to 30+ years of continuous service. This quality level reflects the expectation for the major pieces of equipment to be custom-built or provided with substantial additional features. The installation approach should be focused on full and complete accessibility to all equipment and systems for facility maintenance staff.

Commercial – High level of quality for equipment and materials, reflecting heavy daytime use and light nighttime use. This quality level reflects the expectation of the contractors to provide competitively priced equipment and systems which meet the intent of the specifications. The installation approach should be focused on balancing cost-competitiveness with ease of maintenance.

Light Commercial – Cost competitiveness of equipment and materials is encouraged by the Owner since the duty of the systems will be light. The expectation of installation quality and workmanship shall be high. Cost competitive equipment and material substitutions will be entertained as long as minimum code standards are maintained.

4.3. Equipment selection, specification and installation practices will reflect a commitment to long- term longevity of system, ease of maintenance and energy efficiency.

4.4. Proposed manufacturers of major equipment will be as indicated below. Alternate manufacturers may be used as approved by the design team and Owner.

Equipment	Manufacturer(s)
Medium Voltage Transformers	Utility Provided
Medium Voltage Switches	Utility Provided
Power Distribution Equipment	Square D, Eaton, Siemens, GE
Generators	Cummins, Caterpillar, Kohler, Detroit Diesel
Automatic Transfer Switches	ASCO, Cummins, Kohler
Wiring Devices	Hubbell, Leviton, Pass & Seymour
Surge Protective Devices	Surge Suppression Inc.

4.5. Spare capacities for this project will be as indicated below.

Equipment	Spare Capacity
Switchboards (1600A and larger)	10%
Panelboards (600A to 1600A)	15%
Panelboards (400A and smaller)	25%
Motor Control Centers	20%
Transformers	20%

5. Description of Systems

5.1. Power Distribution System

5.1.1. System Description

- The power distribution system is comprised of normal and emergency power systems. Major system components include medium voltage switches, transformers, switchboards, panelboards, motor control centers, battery systems and transfer switches.
- The medium voltage distribution system will be 12.47 kV, 3 phase, 4 wire. System will be utility operated (Sacramento Municipal Utilities District aka SMUD). Contractor will provide raceways, pads and pullboxes, SMUD will provide conductors, pad mounted switches and transformers.
- Metering of the normal services will be achieved at secondary voltage by utility- provided metering equipment.
- CEC 700 loads in all facilities will utilize lighting inverters. The emergency electrical services will include battery system at facilities with substantial LSS systems and the Animal Care Building. Batteries will tie into the electrical distribution based on requirements from the Owner. These Optional Stand by loads will connection through a Automatic Transfer Switch (ATS).

5.1.1 Photovoltaic System

- Design intent includes the incorporation of photovoltaic panels (PV) as required by code with an option to include additional PV based on LEED. A minimum area of 15% of the square foot for PV panels on building roofs will be developed to maximize the potential use of this renewable resource. T24 requires certain occupancies to have PV and battery storage, these buildings will be provided with arrays. This generally applies to all buildings where 80% or more of the use is retail, office and/or restaurants. Space will be provided in each building that accommodates rooftop PV to support inverters and capacitor storage of PV not utilized during daylight hours.
- The PV requirement for LEED Gold is approximately 36,000 Square Feet. At this time a large amount of this PV would be over parking spaces. Larger roofs within the Zoo could be utilized as well. In particular, the roof of the animal care facility will have maximum amount of PV possible (up to ~10,000 SF). This will tie into the back up battery system to provide power during outages.
- PV storage will be utilized to either support non-daylight hours or peak load hours to offset utility demand hours. In areas where several buildings are in close proximity to each a centralized kWh storage system will be considered to consolidate and reduce impact on individual building programmed area.

5.1.2. Explanation of Operation

- Under normal conditions, power distribution throughout the zoo will be achieved via a combination of power generated from PV system along utility provided normal power system. Upon loss of utility power, power distribution will switch over to the optional stand by power distribution systems. Optional standby loads should be restored within 60 seconds.

6. System Design Criteria

6.1. Distribution Switchboards

6.1.1. Comparable to Square D; front-connected, front-accessible; rated for 3 phase, 4 wire, 60 Hz service and listed for use as service entrance equipment (when required).

6.1.2. Switchboards will be used as the main point of distribution in each building, holding area, or distribution center as needed for the 480V, 3 phase power. Where required, a separate switchboard will be provided to isolate different types of loads such as general facility, audio / visual, etc.

6.1.3. Each switchboard will have a 100% rated main circuit breaker with adjustable trips that will coordinate with the bus rating. The main breaker will be located in its own section with branch breakers located in adjacent sections. The main breaker to have accessories such as shunt trip and residual current.

6.1.4. Enclosure will be NEMA 1 for indoor dry locations and NEMA 3R for outdoor locations.

6.1.5. Main devices to be fixed, individually mounted. Branch devices to be panel mounted.

6.1.6. Phase, neutral and ground buses will be hard-drawn copper, tin-plated. All busses will be uniform capacity for entire length of switchboard and shall allow for future extensions from both ends. Neutral bus will be 100% of the ampacity of the phase buses.

6.1.7. Conductor connectors will be compression type.

6.1.8. All switchboards will be floor mounted on a housekeeping pad.

6.2. Panelboards

6.2.1. Comparable to SquareD; panelboards are to be dead front construction with 100% copper busses for distribution of 277/480 volt power inside buildings and attractions. Where required panel boards will be rated for service entrance use.

6.2.2. Enclosures will be NEMA 1 for indoor dry locations, NEMA 3R for outdoor locations, NEMA 4X stainless steel for kitchens or saltwater environments, NEMA 3R for other wet or damp indoor locations, and NEMA 12 for indoor locations subject to dust, falling dirt and dripping non-corrosive liquids.

6.2.3. Each panelboard to have a main circuit breaker unless located within sight of its source switchboard. All breakers to be rated for short circuit per the electrical drawings. Breakers to be bolt on style.

6.2.4. A bare uninsulated copper ground bus bar to be provided along with full sized copper bus with suitable lugs for loads requiring a neutral connection.

6.2.5. Conductor connectors will be compression type.

6.2.6. All panelboards to have one 3/4 in. conduit from flush mounted enclosures to ceiling areas for every three spare circuit breakers or circuit spaces or parts thereof. Panelboards to have 25% spare capacity minimum as well as 25% spare breakers or bus space for future.

6.2.7. Panelboards supplying non-linear loads, as indicated on the drawings shall be listed for use with non-linear loads and have neutral rated for 200% of panelboard phase current. Also, provide these panels will an isolation ground bus bar.

6.2.8. Operable Breaker Panelboards shall have a web enabled controller that can be networked together on the facility network. The main controller to be provided with accessories so it can be connected to a copper or a fiber network as needed and shown on the electrical drawings. Where a slave panel is used, wiring per manufacturers recommendations shall be provided for a fully functional system. Panelboards to be provided with a full-length control bus to allow for future additions of operable breakers.

6.2.9. All panelboards in public areas will be flush mounted. All panelboards in back of house areas shall be surface mounted unless subject to potential damage in which case they will be flush mounted.

6.3. Motor Control Centers (MCC)

6.3.1. When a large quantity of motors are located in one area, a motor control center shall be provided for housing of the over current devices and starters. The MCC shall be comprised of modular sections with front access only. The enclosure shall be a dead front construction of steel; comparable to SquareD.

6.3.2. Phase, neutral and ground buses will be hard-drawn copper, tin-plated. All busses will be uniform capacity for entire length of MCC and will allow for future extensions from both ends. Neutral bus will be 100% of the ampacity of the phase buses.

6.3.3. Conductor connectors will be compression type.

6.3.4. Each MCC line up shall have a 100% rated main circuit breaker.

6.3.5. Compartments will be modular with individual doors. Interlocks shall be provided on combination controller units requiring disconnecting means in off position before door can be opened or closed.

6.3.6. A wiring channel will be provided in each vertical section for vertical and horizontal wiring to each unit compartment.

6.3.7. Overcurrent protection integral to compartments will be thermal magnetic circuit breakers.

6.3.8. Accessories (Hand-Off-Auto, LED pilot lights, auxiliary contacts, etc) will be provided as required.

6.3.9. Each MCC shall be installed on 4 in. concrete housekeeping pad.

6.4. Back Up Power Systems

6.4.1. A battery standby system will be the primary source of back up power for the animal care building. The run time will need to be determined by the Owner once the program is known. It is understood the clinic function and night time heating are the largest concerns for back up power. The battery cabinet will be located outside of the building and can be also used for load peaking as well as back up power. This will only be CEC 702 loads (Optional Stand By). The battery banks will have fans, but typically 70dB or less at 1 meter.

6.4.2. Generator connections will be provided at animal care facility in case there is a longer outage the batteries and solar cannot support.

6.4.3. Emergency (CEC 700) loads would be from a UL 924 listed inverter system.

6.5. Automatic Transfer Switches

6.5.1. ATS(s) shall be comparable to ASCO 300 series.

6.5.2. ATS(s) will be 3 or 4-pole depending on application.

6.5.3. Enclosure(s) will be NEMA 1 when indoor and NEMA 3R when outdoors.

6.5.4. ATS(s) will be wall mounted or on a concrete housekeeping pad.

6.6. Overcurrent Protective Devices

6.6.1. All circuit breakers will be provided with AL/CU listed connector lugs and will be bolt on type.

6.6.2. Circuit breakers to be molded case, bolt on type with frame sizes as indicated on the electrical drawings. Breakers to have permanent thermal and instantaneous magnetic trips on each pole. The instantaneous magnetic trip shall be adjustable on all breakers with a frame size above 150 amps.

6.6.3. Adjustable, instantaneous-trip circuit breakers will be provided with a front-mounted, field-adjustable trip setting magnetic trip element.

6.6.4. Ground fault circuit interrupter (GFCI) type circuit breakers shall be provided as noted on plans and/or panel schedules. The typical areas of use include wet locations around sinks, pools and water attractions. GFCI circuit breakers shall provide ground-fault protection for people. The GFCI circuit breaker shall trip when a fault current to ground is 6 milliamperes or more.

6.6.5. Circuit breakers shall be fully rated for available fault current. Series rating is not acceptable.

6.6.6. Where required to achieve systems coordination with upstream and downstream overcurrent devices, solid-state electronic trip circuit breakers will be provided. Electronic trip circuit breakers will be provided with field-replaceable rating plug, rms sensing and with the following field-adjustable settings; instantaneous trip, long- and short-time pickup levels, long- and short-time adjustments, ground-fault pickup level, time delay and I2t response.

6.6.7. Fuses to be used on this project shall be Class L, CC, RK1, and RK5, as needed. Fuses to be rated for 200,000 RMS symmetrical interrupting current. Type L fuses shall be used for protecting service entrances and large feeders. Class CC fuses shall be used for motor control circuits, lighting ballasts, control transformers and street lights. Class RK1 shall be used when protecting circuit breakers. Class RK5 shall be used for protecting motors.

6.6.8. Fuses will be non-renewable cartridge fuses with voltage ratings consistent with circuit voltages.

6.7. Motor and Circuit Disconnects

6.7.1. Motor and circuit disconnects will be used for all equipment including but not limited to LSS, mechanical, plumbing, architectural and specialty equipment.

6.7.2. A disconnect switch shall be provided at every motor location and equipment location that does not have a cord and plug.

6.7.3. Disconnects will be located directly adjacent to equipment being served unless such an installation would prove a safety hazard.

6.7.4. Combination controller/disconnects shall be used wherever practical.

6.7.5. Generally, non-fusible switches shall be used for loads below 250V or where the fault current is below 10,000A. Generally, fusible switches shall be used for loads above 250V or where the fault current is above 10,000A.

6.7.6. Disconnect switches, located at motors controlled by an adjustable frequency drive shall be provided with a late make, early break auxiliary contact rated for ten amps continuous duty. This auxiliary contact shall be wired into the AFD emergency shutdown (coast to stop) circuit to ensure shutdown of the AFD in the event of the disconnect being opened.

6.7.7. For smaller single-phase equipment not requiring a starter, surface or recessed horsepower rated switches will be mounted in enclosure suited to its location. Contacts shall be visible from both sides and shall have a direct mechanical linkage to the operator handle. The enclosure shall be furnished with a handle guard having locking provisions.

6.7.8. All disconnect switches to be surface mounted, heavy duty type sheet steel enclosed that are fusible or non-fusible. Switches shall be quick make, quick break type; constructed so that switch blades are visible in 'Off' position with door open and is capable of being padlocked in 'Off' position. Switches shall have a cover interlock to prevent unauthorized opening of the switch door when the handle is in the "ON" position.

6.7.9. Enclosure shall be steel NEMA 1 for interior dry locations; NEMA 3R for exterior wet locations; NEMA 4X fiberglass for interior corrosive areas and NEMA 4X stainless steel for exterior corrosive areas.

6.7.10. Fusible and non-fusible switches shall be provided with an equipment ground kit, neutral kit, auxiliary contact kit ((2) NO/NC form "C" contacts) and compression type lugs.

6.7.11. Elevator disconnect switches shall consist of a single enclosure that houses the elevator disconnecting means as well as necessary relays, control transformers, auxiliary contacts, and other accessories as shown on the drawings and as described herein.

6.8. Motor Controllers

6.8.1. Enclosure shall be steel NEMA 1 for interior dry locations; NEMA 3R for exterior wet locations; NEMA 4X fiberglass for interior corrosive areas and NEMA 4X stainless steel for exterior corrosive areas.

6.8.2. Manual controllers shall be general purpose, Class A, with "quick-make, quick-break" toggle action, marked to show whether unit is "Off", "On" or "Tripped".

6.8.3. Magnetic controllers shall be Class A, full voltage, non-reversing, across the line unless noted otherwise. Reduced voltage controllers shall be used wherever a standard controller would cause a greater than 10% voltage dip.

6.8.4. Large motors that will provide energy savings or require speed control will have adjustable frequency drives (AFD). AFDs shall be solid state with a pulse width modulated output waveform. The controller shall employ a full wave rectifier, AC input line reactor, totaling a minimum of 5% equivalent impedance, capacitors and IGBTs as the output switching device. The AFDs will have a 3-position Hand-Off-Auto switch, digital LCD screen with a controller allowing full adjustability and manual control. When the enclosure is opened, the power shall be shunted so the electrical components are not energized.

6.8.5. Controllers will be located directly adjacent to equipment being served unless such an installation would prove a safety hazard. Controllers will be located in motor control centers where large groups of equipment are located together and within plane site of the motor control center.

6.8.6. Combination controller/disconnects shall be used wherever practical.

6.9. Wires, Cables and Connectors

6.9.1. Conductors on this project are to be copper or aluminum (for #1 AWG and larger) based on cost and engineering decision. Solid, single conductors shall be used for #10 and smaller. #12 is the minimum wire size for general use wiring. Stranded, single conductor shall be used for #8 and larger for general use wiring. Stranded, single conductor, #12 and larger, shall be used for motors and other installations where vibration is generated. All control wiring to be stranded, single conductor, #14.

6.9.2. Conductors to first device on a branch circuit shall be #10 minimum.

6.9.3. Conductors shall be continuous from outlet to outlet and no splices shall be made except within outlet or junction boxes.

6.9.4. When flexible cords and cables are used for the connection of special equipment as indicated on the electrical drawings, the maximum length is 6 feet.

6.10. Feeder Circuits

6.10.1. All feeder circuits are to extend at their full capacity from origin to termination.

6.10.2. Each raceway will contain only those conductors constituting a single feeder circuit.

6.10.3. Where feeder conductors are run in parallel, conductors shall be of same length, same material, circular-mil area, insulation type, and terminated in same manner.

6.10.4. Where parallel feeder conductors are run in separate raceways, raceways shall have same physical characteristics. Each raceway will contain a conductor or each phase and neutral, if used, and a grounding conductor.

6.10.5. Feeders shall follow most accessible routes, concealed in construction in finished areas, exposed to the minimum temperature gradient and to minimum temperature fluctuation.

6.10.6. Feeders will be sized for a maximum voltage drop of 2%.

6.11. Branch Circuits

6.11.1. For branch circuits, all 20 amp, 120 volt branch circuit homeruns (to panelboard) serving receptacles, equipment, and lighting shall be 4.0mm2 minimum to first outlet or light fixture. No more than three circuits shall be allowed in a single home run.

Distance	Wire Size
0 – 100 ft from panelboard to first outlet	#10 solid minimum
100 ft – 150 ft from panelboard to first outlet	#8 stranded min
150 ft – 250 ft from panelboard to first outlet	#6 stranded min

6.11.2. Branch circuit conductors shall be sized so that voltage drop does not exceed 3% and shall have a dedicated neutral conductor. All neutral conductors will be considered current carrying for derating purposes.

6.11.3. When isolated ground receptacle circuits are used, provide a dedicated neutral conductor and a dedicated isolated ground conductor for each circuit.

6.11.4. Any branch circuit protected by a RCCB circuit breaker shall be provided with a dedicated neutral conductor.

6.12. Wireway

6.12.1. Where called for in the drawings, wireway shall be used where allowed by local code. Separate wireways shall be provided for each different system such as, but not limited to, power, audio, data, and BMS.

6.12.2. Wireways shall be galvanized steel with no lid. These wireways shall be run parallel and perpendicular to building structure. This routing to follow conduit, cable trays, and other facility utilities.

6.12.3. Wireway used for pulling purposes, the wireways shall be steel painted with a rust-inhibiting phosphatizing grey paint and a screw type lid.

6.12.4. All wireway to be smooth as to not nick or destroy any wiring isolation. Standard junctions and intersections are to be used for general routing and negotiating other obstructions.

6.13. Conduit

6.13.1. Conduit shall be provided for all general routing where wireway is not used, additionally for conductors located in walls, in slabs, below grade, interior corrosive areas, and all exterior applications.

6.13.2. Conduit to be concealed except in mechanical and utility areas and where noted exposed. Conduit run concealed above suspended ceilings shall be routed parallel or perpendicular (at right angles to construction using as long of bends as possible) and shall be grouped. Run exposed conduit parallel to or at right angles with lines of building.

6.13.3. In themed areas, conduit to be carefully coordinated with show sets, theming, and architectural details. If conduit is to be run exposed, it shall be painted to match surroundings.

6.13.4. Spare conduit shall be provided to future panelboard and other equipment locations. These conduits shall be stubbed a minimum of 6 inches above finish slab and capped with a pull string.

6.13.5. (1) 1 inch spare conduit from panelboard to above accessible ceiling will be provided for each (3) spaces or spare breakers in panelboards. All spare conduits will be provided with a pull string and will be labeled at each end with the terminus of opposite end.

6.13.6. Rigid nonmetallic conduit shall be used in the following locations:

- When exposed in areas designated as "water treatment" or "wet", including but not limited to: chemical rooms; water treatment zones; tank areas; and outdoors.
- When run in grade or in slabs, however, should be transitioned to RGS within 4 inches of leaving the slab.

6.13.7. Rigid metallic conduit shall be used for interior spaces for general wiring unless noted otherwise. Die cast fittings will not be allowed. The largest size allowed shall be 4 inch.

6.13.8. All conduit located in and around fuel dispensing equipment and tanks shall be black mastic coated galvanized rigid steel. Conduit seals shall be installed in each conduit entering or leaving a fuel dispenser or passing through a hazardous area.

6.13.9. Conduit type will be as indicated below:

Location	Conduit Type
Exterior Exposed	RGS
Exterior Concealed	RGS
Underground (outside building foundation)	PVC Sch 40 (normal) PVC Sch 80 (emergency)
Underground (below slab)	PVC Sch 40
In Concrete	PVC Sch 40
Interior Dry (not exposed to physical damage)	EMT
Interior Dry (exposed to physical damage)	RGS (below switch height)
	EMT (above switch height)
Interior Dry (concealed)	EMT
Interior Damp/Wet	PVC Sch 40
Interior Corrosive	PVC Sch 40
Connection to Vibrating Equipment	FMC (dry) LFNC (damp/wet/corrosive)

6.14. Supporting Devices

6.14.1. When equipment hangers, supports and any other mechanism is used to support conduit, wireway, equipment, cable, etc. the material classification shall be one of the following, "corrosive service" or "normal service". "Corrosive-service" mechanical support devices to be used in areas designated as "water treatment" or "wet", including but not limited to: areas over and within 15 feet of open water tanks, pools or basins; splash zones; submerged conditions; chemical rooms; other water treatment zones, and exterior spaces.

6.14.2. Suspended equipment shall have a second means of support in accordance with Universal Guidelines. Architectural track lights mounted directly to the structure do not require a second means of support except where recommended by the manufacturer of the track system.

6.14.3. Hangers and supports will be as indicated below.

Location	Support Material
Exterior	Hot-Dip Galvanized Steel
Interior Dry	Hot-Dip Galvanized Steel
Interior Damp/Wet	Non-Metallic
Interior Corrosive	Non-Metallic

6.15. Boxes

6.15.1. Standard electrical boxes to be used in all interior construction unless noted to be a corrosive area. Refer to the Supporting Devices section for areas defined as corrosive. All boxes used in exterior locations shall be considered in a corrosive environment.

6.15.2. Weatherproof boxes are to be NEMA 4X polycarbonate, stainless steel or cadmium plated malleable iron for concealed outlet and ferraloy cast box complete with threaded conduit ends or NEMA 4X polycarbonate for surface receptacles. Provide cast metal or polycarbonate face plate with stainless steel spring-hinged, waterproof cap configured for each application. Include face plate gasket and stainless steel fasteners. Weatherproof receptacles shall be flush mounted unless otherwise indicated on plans.

6.15.3. Large electrical pull boxes located in themed front of house areas to have the lids and box lip modified to accept various paving/topping materials. This will allow a large pullbox to be concealed in walkways and other guest paths with minimal visual intrusion. The topping shall not exceed three inches to keep the weight of the lids to a reasonable amount.

6.15.4. Large electrical pull boxes that are in back of house areas or in landscaping to have standard metal lids.

6.16. Terminal Cabinets

6.16.1. Cabinet to have doors with concealed hinges, door locks (keyed alike with panelboards), a 3/4 in plywood back plate and finished with black insulating varnish or paint.

6.16.2. The size will be indicated on drawings to accommodate terminal blocks with 10% spare capacity. As well as specify panelboard type trims, flush or surface mounting, code gauge galvanized steel and color. Regardless of color, all finishes are to be baked enamel.

6.17. Wiring Devices

6.17.1. Interior convenience receptacles will be located throughout the facility such that any point along the floor can be reached with a 25 ft extension cord. Exterior convenience receptacles will be located adjacent to exterior entrances.

6.17.2. Receptacles for servicing of audio, telecommunications, POS and other sensitive electronic loads shall be of the isolated ground type.

6.17.3. Receptacles installed in all exterior and interior damp/wet locations will be of the RCD type and provided with in-use weatherproof covers.

6.17.4. Receptacles in back-of-house service areas, mechanical/electrical spaces and kitchens will be mounted a minimum of 48" AFF. All other receptacles will be mounted at 18" AFF unless specific needs require otherwise.

- Offices shall have at a minimum, (1) double receptacle on the back wall and (2) more receptacles on side walls.
- A dedicated receptacle shall be provided for large office equipment such as copiers, coffee makers printers, etc.
- Maintenance receptacles shall be mounted at 48" AFF unless noted other wise and shall be spaced no further apart than 36" on workbench walls.
- Back of house locker rooms, used by park employees, will have a duplex receptacle mounted 18"mm above lavatory counter back splash, at each end of the counter space for personal grooming items such as razors, hair driers, etc.

6.17.5. Devices circuited from normal power panels shall be white in color for back of house spaces. In front of house spaces the devices shall match surrounding finishes as best as possible. Devices circuited from emergency power panels shall be red in color.

6.17.6. Receptacle faceplates shall be impact resistant nylon matching the device color except in back of house areas where faceplates will be stainless steel.

6.17.7. Simplex receptacles to be single heavy duty type receptacles, 2 pole, 3 wire, grounding, with green hexagonal equipment ground screw, 20 ampere, 125 volts.

6.17.8. Duplex receptacles to be double heavy duty type receptacles, 2 pole, 3 wire, grounding, with green hexagonal equipment ground screw, 20 ampere, 125 volts.

6.17.9. GFCI devices to be heavy duty duplex receptacles, capable of being installed in a 2-1/2 inch deep outlet box without adapter. Shall be grounding 125 volts, 60 Hz; with solid-state ground fault sensing and signaling; with 6 milliamperes ground fault trip level.

6.17.10. Isolation ground receptacles to be single heavy duty type receptacles, 2 pole, 3 wire, grounding, with green hexagonal equipment ground screw, 20 ampere, 125 volts.

6.17.11. Switches shall be mounted at 48" AFF unless specific needs require otherwise.

6.17.12. Switches shall be manufacturer's specification grade toggle switch with thermoplastic abuse resistant toggle, quiet action, and heavy duty contact arm.

6.17.13. Dimmer switches for fluorescent lighting shall be single pole, full-wave semi-conductor modular type; rated for 125V, 60 Hz, and with electromagnetic filters to reduce noise, RF and TV interference to minimum.

6.17.14. Switch wall plates shall be stainless steel in back of house areas and smooth nylon in front of house spaces in a color that matches other electrical devices. A single cover shall be provided when more than one switch is ganged in a junction box.

6.17.15. Switches and receptacles mounted in exterior or interior wet locations subject to splashing or washdown shall be hinged NEMA 3R rated with a neoprene gasket.

6.18. Grounding

6.18.1. The grounding system of the zoo will provide an equipotential grounding system for all electrical equipment and large exposed metal structures. The grounding system shall consist of conductors, bus bars, rods, building steel, large footings, counter poise loops, metal water pipes, service grounding equipment.

6.18.2. Systems to be bonded together to common ground include but are not limited to all power distribution systems, low voltage systems, building steel structural system and water habitat / pool systems. At no point shall multiple, independently grounded system exist.

6.18.3. Ground bus bars will be provided in all electrical and low voltage system rooms. Ground bus bars in electrical rooms will be bonded back to the main electrical ground bus bar. All ground bus bars in low voltage system rooms will be bonded together with #4 AWG minimum back to the main electrical room ground bus bar. At no point will low voltage system ground bus bars be bonded to electrical room ground bus bars except at the main electrical room.

6.18.4. All low voltage cable tray, conduits and equipment racks will be bonded with #6 AWG minimum.

6.18.5. Service ground will consist of ground rods in quantity as required (minimum of three) to achieve indicated resistance to ground values. Ground rods shall be a minimum of 10' long, spaced 6' apart.

6.18.6. Service ground will bond building steel, water piping, rebar, ground ring (if provided) and ground rods together to one common ground bus bar located in the main electrical room in accordance with NEC requirements.

6.18.7. Main grounding conductor shall be continuous without splice from water service ground to service equipment.

6.18.8. The housing of all motors located outside of a building footprint to be bonded to the rebar of the slab it will be installed on. If this slab is independent of a building, this rebar shall be bonded to the nearest park grounding system.

6.18.9. Hand railings, water feature components, and other metallic towers shall be bonded back to the nearest grounding system.

6.18.10. All grounding connections to be exothermically welded except ground rods which can be mechanically fastened.

6.18.11. Resistance to ground will be as per NEC.

6.18.12. Bus Bars will be predrilled rectangular bars of annealed copper located in main electrical and telecommunications rooms. Bars will be provided with stand-off insulators.

6.18.13. Pipe connections will be copper or copper alloy, bolted pressure type with at least two bolts; bus bar connections will be cast silicon bronze, solderless compression type, long-barrel with two bolts; all welded connections will be exothermic type.

6.18.14. Ground rods for lighting protection system and service entrance will be copper-clad steel, 3/4 in diameter by 10' long sections.

6.19. Lighting

6.19.1. Lighting Fixtures

- All lighting in back of house areas with a ceiling grid such as offices and corridors shall have 2' x 2' or 2' x 4' LED troffers.
- All lighting in administrative or other non-animal related back of house and support areas without ceilings shall be 48" LED strip fixtures with wire guards.
- Light fixtures in animal care areas and back of house wet support areas will be 48" vaporlume LED fixtures.
- Site pathway lighting will be provided by decorative fixtures atop 15' poles spaced evenly along walkways throughout the site
- Site landscape and sign lighting will be LED grade mounted uplights
- Back of house bathroom rooms and locker rooms to have down lights installed main circulation and locker areas. A single lamp perimeter cove light shall be provided over bathroom stalls and over sink and counter top areas. Shower shall have a gasketed down light in each shower stall.
- Light fixtures in exterior back of house areas will be LED wall packs for paved surfaces, service areas, and walking paths.
- Exit signs in back of house areas will be thermoplastic. Exit signs in front of house areas will be either thermo plastic or edge lit as coordinated with architect and theming.
- Emergency and exit/egress lighting will be provided in accordance with all applicable codes.
- Roadway lighting will be provided on the entire service. Since expansion buildings will not be in place, smaller service transformers (30kVA) will be placed in a distance to not exceed 2,000 feet. LED pole lights will be placed along the route. Controls will be wireless and interconnected via a site wide system.

6.19.2. Lighting Control

- Exterior lighting control system will be provided by astronomical time clocks.
- Control of interior back of house areas to be provided via occupant sensors.
- Occupancy sensors are used in locations where occupancy is deemed intermittent. Occupancy sensors will turn lights off at a predetermined amount of time. Where occupancy sensing switches are used, the occupant will be given the ability to turn the lights off upon exiting the room.
- Kitchens, mechanical rooms, and elevator pits shall have wall switches.
- Electrical rooms, low voltage system rooms, and elevator machine rooms shall have timer switches.
- Lighting control types shall be based on minimum requirements of applicable energy code.
- Wall switches are used in locations where an unsafe condition would exist if the lights were turned off automatically, such as kitchens, mechanical rooms, and elevator pits.
- For emergency lighting controlled by a wall switch, an ELCU will be provided to automatically turn emergency lighting on in the event of loss of normal power. The ELCU shall be capable of accepting emergency branch circuit wiring, switch leg wiring

and normal sense wiring. Upon loss of normal sense power, ELCU will automatically override switch leg wiring and turn connected lights on.

6.19.3. Emergency Lighting

- Under normal conditions, lighting will be provided by the normal lighting fixtures. Upon loss of normal power, the emergency generator will start and restore power to the normal lighting fixtures circuited to the emergency branch panel.

6.19.4. General Fixture Characteristics

- Light fixtures shall be listed for the ambient conditions where installed. Fixtures located exterior to the building and/or in unconditioned damp spaces and under cover from direct weather exposure shall be listed as suitable for damp locations. Fixtures located exterior to the building and/or in unconditioned wet spaces and in direct contact with the weather or in washdown areas shall be listed as suitable for wet locations. Fixtures installed with direct contact with insulation shall have an 'IC' rating for direct contact with insulation.
- Mount wall and ceiling fixtures independent and secure so that they are not dependent on finish or ceiling system for support and cannot be rotated or displaced. Fixtures shall be supported from structure.

6.20. Surge Suppression Equipment

6.20.1. All main service entrances will have a parallel surge suppression device to protect the facility equipment. Branch panelboard devices will be installed as needed depending on the location of the panel. The device shall be installed with leads less than 18" of the over current protection device with minimal bends.

6.20.2. Any panel with branch circuits serving exterior equipment shall be provided with surge protective devices (SPD).

6.20.3. SPD to provide protection for all 10 modes of the electrical system and be self-sacrificing with no replaceable components.

6.20.4. Brand panels to have true sine-wave tracking directly connected protection elements for each mode of the electrical system.

6.20.5. Enclosures shall be NEMA 12 enclosures for indoor installations where fire suppression systems are utilized and NEMA 4X when installed in outdoor/wet locations.

7. Operation and Maintenance

7.1. Expectations of Facility Staff for Operation

7.1.1. The Owner has full-time facility staff for preventive maintenance, so the system operation shall be automatic requiring no user input for normal operation.

7.2. Expectations of Facility Staff for Maintenance

7.2.1. The Owner has full-time facility staff performing preventive maintenance. Direct access to equipment shall be planned for during the installation. Directly accessible disconnects, motor controllers, etc., shall be provided for easy replacement of equipment components including fuses, control components, etc.

8. Component Specific Details

Supplemental information for each general type of facility is provided in the following sections

8.1. Food and Beverage

8.1.1. Power Distribution

- A main electrical room will be provided to house the incoming power panels, additional lighting and appliance panelboards as well as the fire alarm control panel. Room size will be as indicated on the electrical floor plans.
- The incoming panelboard will serve additional lighting and appliance panelboards throughout the facility as well as large mechanical and kitchen loads.
- When multiple panelboards are required to serve the dining area, at least one panelboard will be provided for servicing sensitive electronic loads such as audio, telecommunications and POS equipment. This panel will be provided with an isolation ground bar, isolation ground connection and oversized neutral.
- Lighting and appliance panelboards for kitchen equipment loads will be flush mounted and located within the kitchen space itself with a stainless steel cover. Panel will be located within sight of as many pieces of kitchen equipment as possible to allow for the option of using the circuit breaker as the equipment disconnecting means.
- A shunt trip lighting and appliance panelboard will be provided where there are more than ten circuits serving equipment underneath a kitchen hood. The shunt trip on the main circuit breaker in this panel will be triggered by activation of the hood fire suppression system.
- All cords provided for connection of kitchen equipment shall be SO type.

8.1.2. Wiring Devices

- Wiring devices in kitchens areas shall be provided with stainless steel cover plates.
- All receptacles within kitchen areas, and all connections to equipment will be at 48" AFF minimum. Where receptacles or connections are located within casework, they shall be located a minimum of 6" from the bottom of the casework, and shall not interfere with the use of the casework.
- Recessed clock receptacles for connection of fly lights shall be provided at all entrances into dining and kitchen areas.

- Receptacles shall be provided above all display windows that are 12' in length or major fraction thereof.
- RCD receptacles shall not be used for servicing of kitchen equipment loads. Only RCCD circuit breakers shall be used.
- All kitchen equipment which is furnished as a hardwired connection shall be provided with a cord and plug for connection to a receptacle. In no instance shall safety switches be used in kitchen areas for connection of kitchen equipment.

8.1.3. Lighting

- Light fixtures in back of house kitchen areas will be 24" x 48" LED troffers with extra thick lenses and gasketing.
- Light fixtures in coolers, freezers and kitchen hoods will be provided by the equipment manufacturer.

8.1.4. Lighting Control

- Front of house fixtures will be controlled via occupancy sensors
- Control of all kitchen fixtures will be via local manual switching.

8.2. Restrooms

8.2.1. Power Distribution

- Power distribution will be provided from a panelboard located in the restroom building. This panel will provide power for mechanical equipment, lighting, and general loads.

8.3. Retail

8.3.1. Power Distribution

- A main electrical room will be provided to house the incoming power panel, additional lighting and appliance panelboards, and the fire alarm control panel. Room size will be as indicated on the electrical floor plans.
- The incoming panelboard will serve additional lighting and appliance panelboards throughout the facility, as well as large mechanical and retail loads.
- Sensitive electrical loads such as photo racks, printers, special building systems, and POS stations will be served from panels with an isolation ground bar, isolation ground connection and oversized neutral.

8.3.2. Wiring Devices

- Receptacles shall be provided above all display windows that are 12' in length or major fraction thereof.
- Client may require that receptacles be provided along the roof perimeter for special event lighting. These receptacles shall be controlled by remotely operated circuit breakers.
- Four receptacles will be provided for each POS station for additional sale equipment. These receptacles will be provided with isolated grounds.
- Recessed receptacles to be mounted in the wall for video monitors. The mounting heights will be coordinated so the receptacles are behind the monitors.
- Power for the photo racks will be provided to power strips located in the racks. A junction box will be located over the racks and then whip down in flexible conduit where a connection to the rack can be made.

8.4. Animal Care Quarters

8.4.1. Power Distribution

- A main electrical room will be provided to house the facility panelboards, additional lighting and appliance panelboards as well as the fire alarm control panel. Room size will be as indicated on the electrical floor plans.
- For larger care quarters, or for care quarters where LSS systems are adjacent to the building, an incoming switchboard will be provided which will serve additional lighting and appliance panelboards throughout the facility as well as large mechanical and loads.
- LSS power distribution will consist of Motor Control Centers, feeders to LSS equipment, and local disconnects at every pump or motor.

8.4.2. Wiring Devices

- Receptacles will be provided within the holding area corridors as well as above the counter in food prep areas

8.4.3. Lighting

- Lighting for care areas will be provided via LED vaporlume fixtures.

8.4.4. Lighting Control

- Lighting will be controlled via local switches in holding areas

8.4.5. Fire Alarm System

- A fire alarm system consisting of a local fire alarm control panel, pull stations at exits, audio/visual notification devices in food prep areas, visual notification devices in holding areas, heat detectors in holding areas, and flow/tamper switch monitoring where buildings are sprinkled will be provided.

8.4.6. Radiant Heaters

- Electric radiant heaters will be provided in unconditioned care areas. Local disconnects will be provided for radiant heaters.

8.5. Area Development

8.5.1. Site Power

- Convenience receptacles will be provided in landscape areas for maintenance. Receptacles will be GFCI and have an in-use weatherproof enclosure.
- Power to be provided for all signage as required.
- Power for irrigation controllers to be provided by local panels.

8.5.2. Site Lighting

- Site pathway lighting will be provided by decorative fixtures atop 15' poles spaced evenly along walkways throughout the site
- Site landscape and sign lighting will be LED grade mounted uplights

8.5.3. Animal Exhibit Areas

- Convenience receptacles will be provided in landscape areas for maintenance. Receptacles will be GFCI and have an in-use weatherproof enclosure.
- Power to be provided for hot wire, hot grass, electric fences and waterers as required.

8.5.4. Covered Viewing Areas

- In most cases branch circuits for convenience outlets, ceiling fans and lighting will be provided to covered viewing areas. New panels will be required. Disconnecting means will be localized switching
- Lighting in Viewing Areas will be LED fixtures integrated into structures
- At least one convenience receptacle will be provided in the area with a weather proof cover where exposed to the exterior.

8.5.5. Small Food and Retail Carts

- An NEMA 4X fiberglass power enclosure or individual receptacles will be provided and sized appropriately to for the electrical connections required by the food vendor.
- Raceway to be provided from the power enclosure or receptacle(s) and stubbed into floor boxes under the intended equipment. A drain penetration will be provided in this floor box to handle wash down and rain water. The raceway will be sized to handle pulling equipment cords and plugs for connection in the power enclosure or receptacle(s).
- Where a POS system is included, the power to POS and printers shall have dedicated ground conductors.
- At least once convenience receptacle will be provided in the area with a weather proof cover

8.5.6 Electric Vehicle Charging

- All Owner fleet vehicles, maintenance vehicles, golf carts etc will be all electric. Chargers will be located in back of house areas to power these vehicles
- Electric Vehicle Charging will be provided for the Zoo work vehicles as follows:
  - 40 spaces will be provided with Level 2 EVSE (40-amp)
- Refer to the Civil Site package for EV charging in guest parking areas.

9. Appendix

Appendix A: Summary of Load Estimates

Summary	kW Connected	kW Demand	Estimated overall demand factor
			0.70
Phase 1	4,370	3,059	
Phase 2	5,774	4,042	
Subtotal	10,144	7,100	
Peak Coincidence factor - 95%	0.95	0.95	
Estimated total	9,636	6,745	

Appendix B: Estimated Electrical Loads – Phase 1a and 1b

BLDG #	BLDG Name	Voltage	Normal Power kW (connected)	Emerg. Power kW	Fire Alarm
101	Guest Services/Restrooms/Ticketing	480/3	75	47	YES
101	Retail	480/3	48	10	YES
102	Education Entry Restrooms	208/3	9	2	YES
103	The Lodge	480/3	225	104	YES
104	Events Pavilion	208/3	75	3	YES
201	Dwarf Mongoose Care Quarters	208/3	6	1	YES
202	Giraffe Feeding Shelter Canopy	208/3	3	1	NO
202	Giraffe Feeding Shelter Sales Room	208/3	5	2	NO
203	Beer Garden Restrooms	208/3	12	2	NO
204	Beer Service	480/3	15	8	NO
205	Beer Service	480/3	15	8	NO
206	Cheetah Care Quarters	208/3	28	6	YES
207	Cheetah View Shelter	208/3	3	1	NO
208	Fennec Fox Care Quarters	208/3	6	1	YES
209	Lion View Shelter 1	208/3	3	1	NO
210	Lion View Shelter 2	208/3	5	1	NO
211	Meerkat Care Quarters	208/3	6	1	YES
212	Rhino View Shelter 1	208/3	3	1	NO
213	Rhino View Shelter 2	208/3	3	1	NO
214	Rhino Encounter Shelter	208/3	3	1	NO
215	Overnight Guest Duplex	208/3	5	1	YES
215	Overnight Guest Duplex	208/3	5	1	YES
215	Overnight Guest Duplex	208/3	5	1	YES
216	Lion Care Quarters	480/3	49	10	YES
217	Rhino Care Quarters	480/3	105	21	YES
218	Giraffe Care Quarters	480/3	359	72	YES
218	Overnight Guest Suite	208/3	5	1	YES
219	Hoofstock Care Quarters	480/3	141	28	YES
220	Savanna LSS	480/3	60	12	YES
221	Walk In Browse Cooler	208/3	3	1	NO
222	Hay Storage	208/3	6	1	YES
223	Event Lawn Giraffe Feeding Shelter	208/3	3	1	NO

Estimated Electrical Loads – Phase 1a and 1b (Con'd)

BLDG #	BLDG Name	Voltage	Normal Power kW (connected)	Emerg. Power kW	Fire Alarm
301	Flamingo LSS	208/3	3	1	NO
302	Flamingo Care Quarters/Brooder	480/3	71	14	YES
303	Africa Aviary Care Quarters	208/3	6	1	YES
304	Lvl 1: Vestibule	208/3	6	1	YES
304	Lvl 2: Colobus Care Quarters	208/3	6	1	YES
305	Okapi Care Quarters	208/3	6	1	YES
306	Giant Tortoise Care Quarters	208/3	6	1	YES
307	Multipurpose Room	480/3	20	47	NO
307	Multipurpose Room	480/3	20	47	NO
307	Multipurpose Room	480/3	20	47	NO
308	Gelada LSS	208/3	3	1	YES
309	Klipsringer/Hyax Holding	208/3	6	1	YES
310	Gelada View Shelter 2	208/3	3	1	NO
311	Gelada View Shelter 1	208/3	3	1	NO
312	Gelada Care Quarters	480/3	94	19	YES
313	Train Depot	208/3	10	2	NO
314	Alligator Viewing Shelter 1	208/3	3	1	NO
315	Alligator Viewing Shelter 2	208/3	3	1	NO
316	Alligator & Sq. Monkey Care Quarters	208/3	35	7	YES
317	Squirrel Monkey Viewing Shelter	208/3	3	1	NO
318	Parrot Care Quarters	208/3	6	1	YES
319	Play Area Restrooms & Lactation Room	208/3	12	2	NO
320	Carousel Pavilion	208/3	8	0.5	NO
321	Lemur View Shelter 1	208/3	3	1	NO
322	Lemur View Shelter 2	208/3	3	1	NO
323	Lemur Care Quarters	208/3	32	6	YES
324	Quarantine & Nutrition Center)	480/3	367	73	YES
701	Maintence Shed/Shops	480/3	101	20	YES
703	Containerized Fodder System	120/1	1	0	NO
703	Walk In Browse Cooler	208/3	3	1	NO

Estimated Electrical Loads – Phase 1a and 1b (Con'd)

BLDG #	BLDG Name	Voltage	Normal Power kW (connected)	Emerg. Power kW	Fire Alarm
801	Admin Modular 1	208/1	20	47	NO
801	Admin Modular 2	208/1	13	47	NO
801	Admin Modular 3	208/1	14	47	NO
801	Admin Modular 4	208/1	33	47	NO
801	Admin Modular 5	208/1	30	47	NO
801	Admin Modular 6	208/1	34	47	NO
801	Restrooms - Prefabricated	208/1	12	2	NO
802	Animal Staff Modular 1	208/1	25	47	NO
802	Animal Staff Modular 2	208/1	25	47	NO

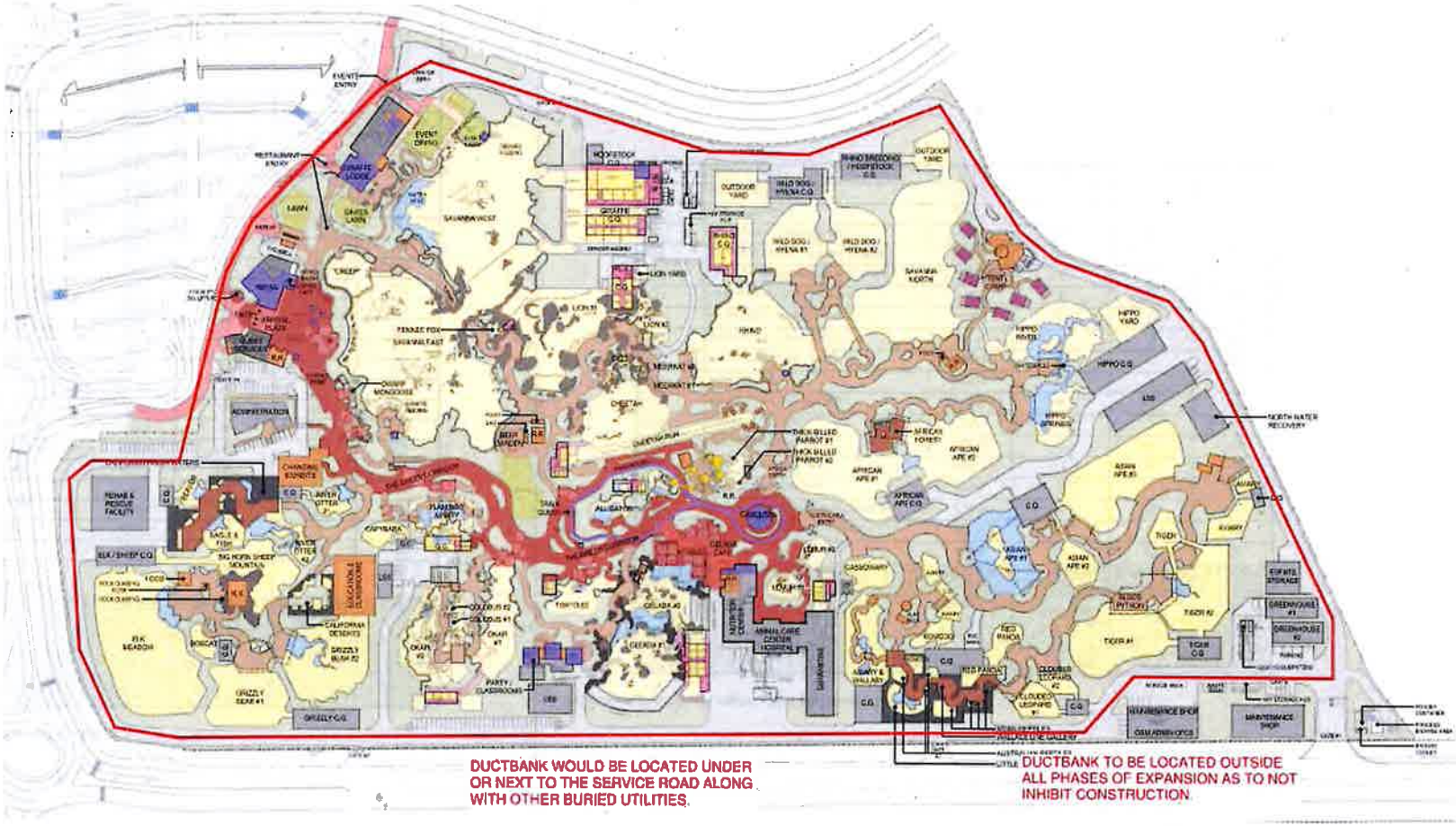
Appendix C: Estimated Electrical Loads – Full Buildout

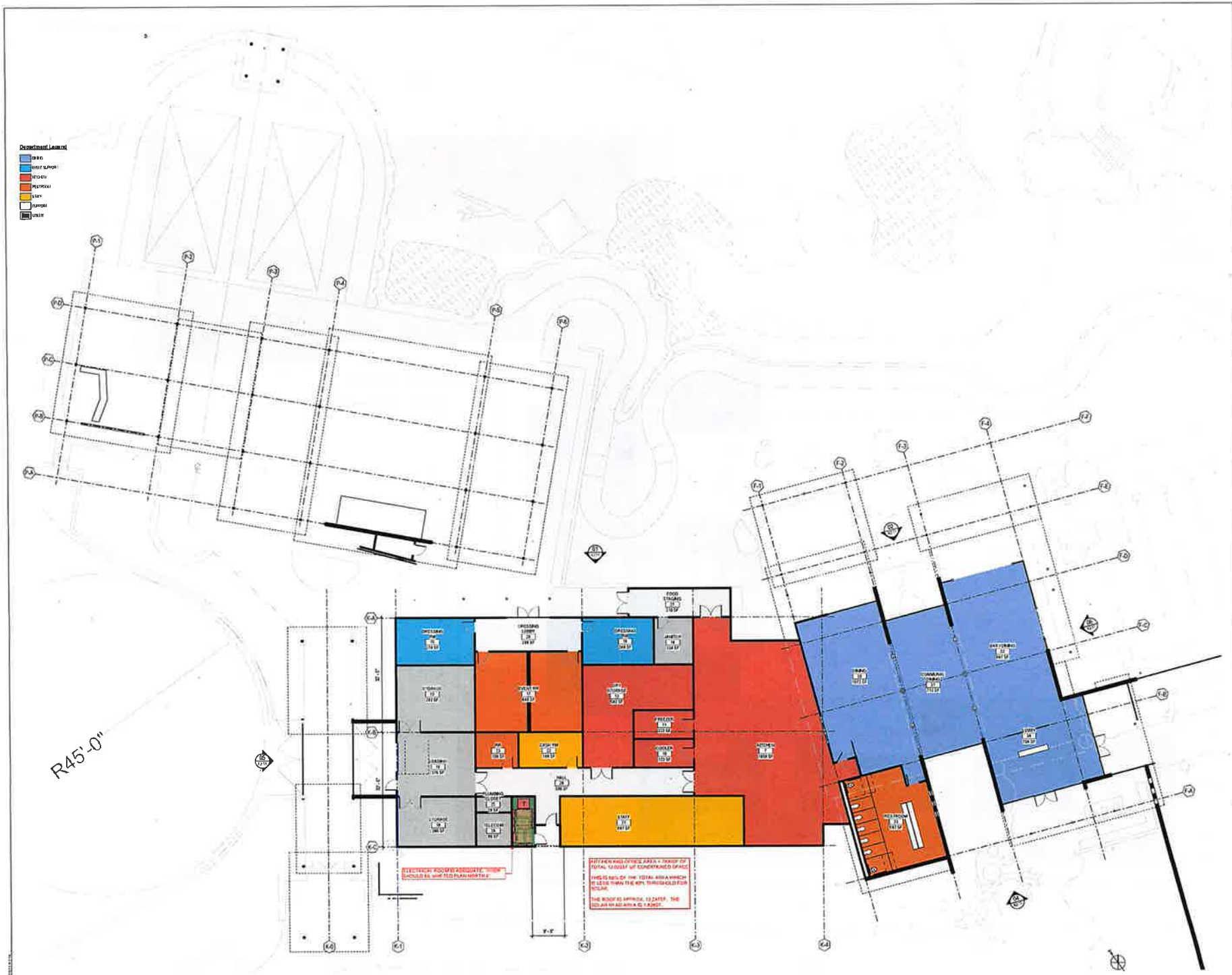
BLDG #	BLDG Name	Voltage	Normal Power kW (connected)	Emerg. Power kW	Fire Alarm
105	Administration / Staff Support & Offices (2-stories)	480/3	236	47	YES
401	Changing Exhibits	480/3	96	19	YES
401	Otter Care Quarters & LSS	480/3	75	15	YES
401	Exhibits	480/3	291	58	YES
401	Beaver Care Quarters	208/3	31	6	YES
402	Education & Classrooms	480/3	236	47	YES
402	California Deserts Indoor Exhibits	480/3	180	69	YES
403	Capybara Care Quarters	480/3	18	15	YES
404	Grizzly Bear View Shelter	480/3	130	26	NO
405	Bobcat Care Quarters	208/3	19	4	YES
406	Restrooms - California	208/3	14	3	NO
407	Food Kiosk	208/3	9	2	NO
408	Big Horned Sheep Care Quarters	208/3	31	6	YES
409	Rescue & Rehab Facility	480/3	212	42	YES
410	Grizzly Bear Care Quarters & LSS	480/3	130	26	YES
501	African Ape Viewing	208/3	3	1	NO
502	Hippo Springs View Shelter	208/3	3	1	NO
503	Hippo River View Shelter	208/3	3	1	NO
504	Food & Restroom Kiosk	208/3	9	2	NO
505	Overnight Arrival Building	208/3	34	7	YES
505	Accomodation 1	208/3	5	1	YES
505	Accomodation 2	208/3	5	1	YES
505	Accomodation 3	208/3	5	1	YES
505	Accomodation 4	208/3	5	1	YES
505	Accomodation 5	208/3	5	1	YES
505	Accomodation 6	208/3	5	1	YES
505	Accomodation 7	208/3	5	1	YES
506	Hippo Care Quarters	480/3	208	42	YES
507	Hippo+ Tiger Filtration	480/3	218	44	YES
508	African Ape CQ	208/3	17	3	YES
509	Wild Dog / Hyena CQ	480/3	75	15	YES
510	Rhino Breeding / Hoofstock CQ	480/3	105	21	YES

Estimated Electrical Loads – Full Buildout (Con'd)

BLDG #	BLDG Name	Voltage	Normal Power kW (connected)	Emerg. Power kW	Fire Alarm
601	Exhibits	480/3	347	69	YES
601	Komodo Dragon/Red Panda C.Q.	208/3	31	6	YES
602	Clouded Leopard Care Quarters	480/3	58	12	YES
603	Tiger View Shelter	208/3	6	1	NO
604	Tiger Care Quarters	480/3	75	15	YES
605	Aviary Care Quarters 1	208/3	12	4	YES
606	Restrooms - Asia	208/3	8	2	NO
606	Aviary Viewing Shelters	208/3	4	1	NO
606	Food Kiosk	208/3	10	6	NO
607	North Water Recovery	480/3	60	12	NO
608	Asian Ape View Shelter	480/3	39	8	NO
609	Asian Ape Care Quarters	480/3	156	31	YES
610	Cassowary Care Quarters	208/3	6	1	YES
611	Australian Aviary Care Quarters	208/3	6	1	YES
612	Clouded Leopard View Shelter	208/3	27	5	NO
702	Maintence Shed/Shops	480/3	101	20	YES
705	Greenhouse 2	208/3	11	2	NO
706	Greenhouse 1	208/3	11	2	NO
707	Event Storage	208/3	15	3	YES

Appendix D: Medium Voltage Site Plan





01 - LODGE - FLOOR PLAN

SAC ZOO

SHR Studios
200 Mahonia Way N.E. #220
Bainbridge Island, WA 98110
phone (206) 842-8232
shrstudios.com

exp U.S. Services Inc.
exp.

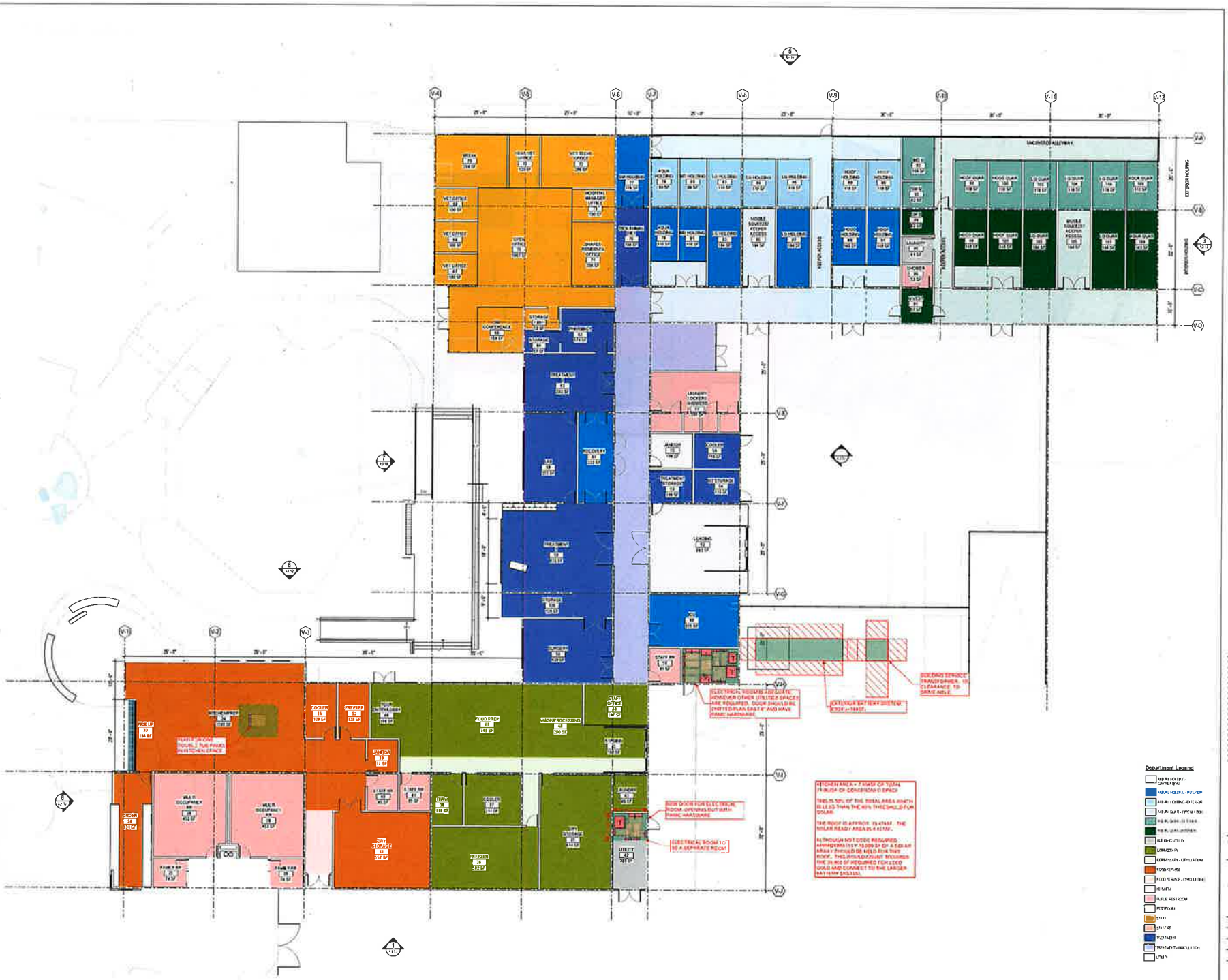
REV	DATE	DESCRIPTION

NOT FOR CONSTRUCTION

THE NEW ZOO AT ELK GROVE

LODGE - FLOOR PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	10/06/2023
SCALE:	1/8" = 1'-0"
CHECKED:	MAS
SHEET:	E2.21



01 - ANIMAL CARE - FLOOR PLAN

SAC ZOO

SH R Studios

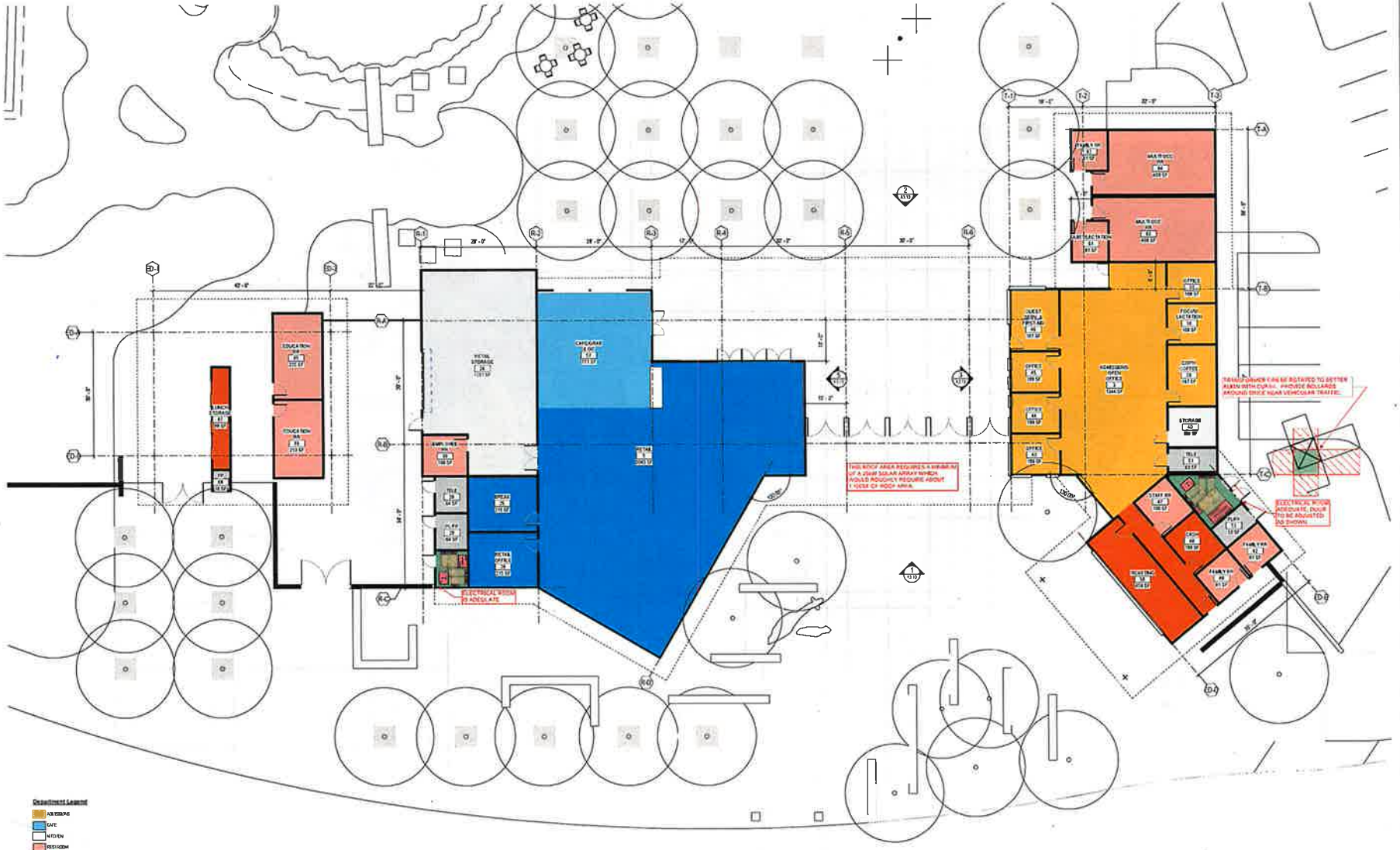
exp.

NOT FOR CONSTRUCTION

THE NEW ZOO AT ELK GROVE

GELADA/ANIMAL CARE - FLOOR PLAN

SHEET SIZE	ARCH E (36" x 48")
DATE	10/6/2023
SCALE	1/8" = 1'-0"
CHECKED	MAS
SHEET	E2.23



ENTRY - FIRST FLOOR PLAN
1/8" = 1'-0"

SAC ZOO

Enter address here

shr STUDIOS

SH R Studios
250 Madrona Way N.E. #220
Bainbridge Island, WA 98110
phone: (206) 842-9130
shrstudios.com

exp U.S. Services Inc.
exp.

REV	DATE	DESCRIPTION

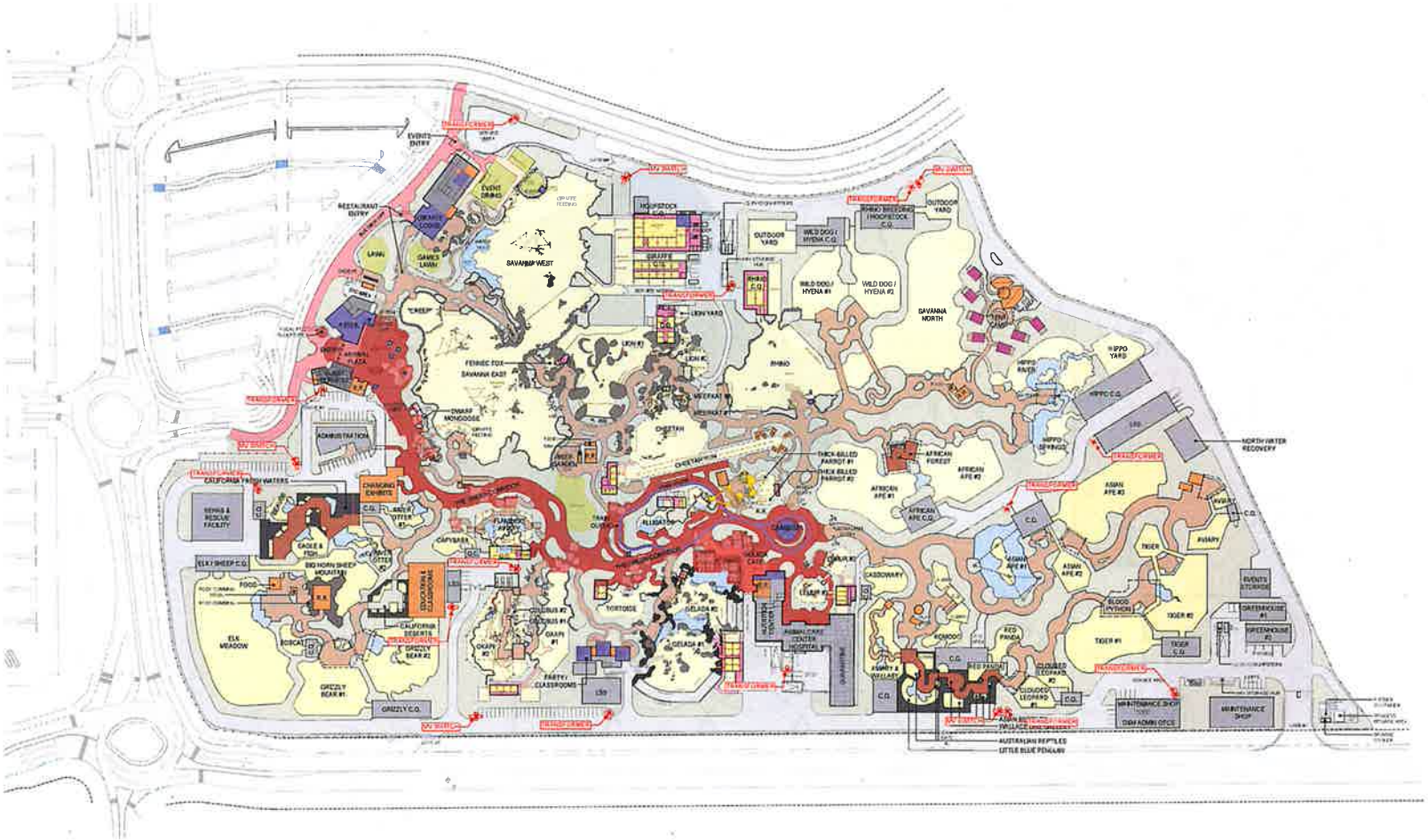
NOT FOR CONSTRUCTION

THE NEW ZOO AT ELK GROVE

ENTRY - FLOOR PLAN

SHEET SIZE:	ARCH E (36" x 48")
DATE:	10/06/2023
SCALE:	1/8" = 1'-0"
CHECKED	MAS
SHEET:	E2.24

Project Status



1 Master Plan
1" = 60'-0"

SAC ZOO

SHR Studios
250 Mallory Way NE #220
Bainbridge Island, WA 98110
phone (206) 842-8233
shrstudios.com

exp U.S. Services Inc.

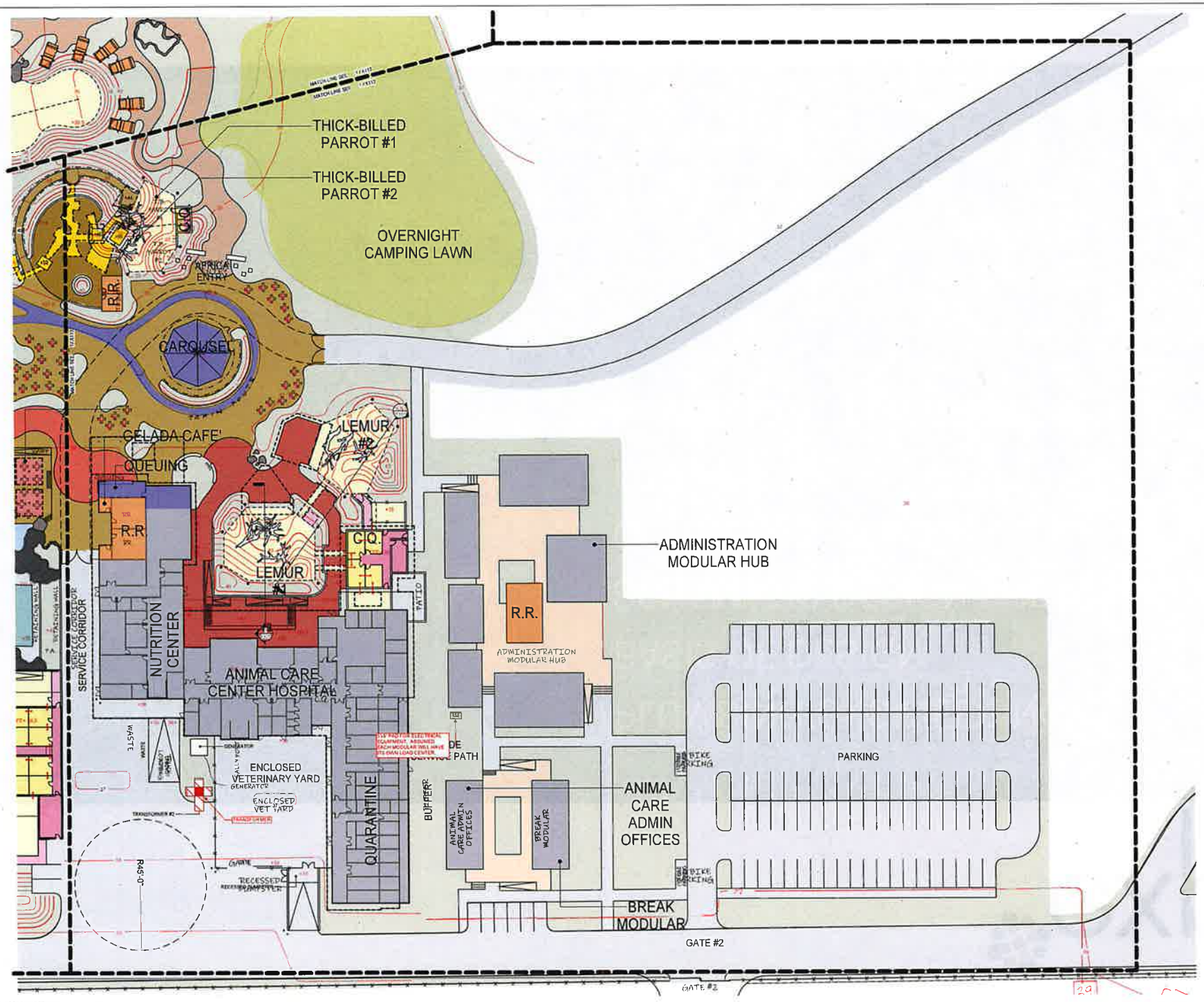
exp.

NOT FOR CONSTRUCTION

THE NEW ZOO AT ELK GROVE

SITE PLAN - ELECTRICAL

SHEET SIZE	ARCH E (36" x 48")
DATE	10/6/2023
SCALE	1" = 60'-0"
CHECKED	MAS
SHEET	E100



1 Materials Plan - Area D

SAC ZOO

THE NEW ZOO AT ELK GROVE

ENLARGED SITE PLAN - EELECTRICAL

SHEET SIZE	ARCH E (36" x 48")
DATE	10/06/2021
SCALE	1" = 20'-0"
CHECKED	MAS
SHEET	

E101

PLUMBING ENGINEERING
BASIS OF DESIGN
SCHEMATIC DESIGN SUBMISSION
OCTOBER 6, 2023
FOR PRICING
NEW ZOO AT ELK GROVE

1. Executive Summary

1.1. The plumbing systems in each building will be designed as indicated below. Depending on the requirements of each building, as outlined in the Component Specific Details section below, not every building will be provided with every service.

2. Applicable Codes, Guidelines and Standards

2.1. Design will conform with requirements of identified codes, standards, and guidelines. Where differences arise between codes, standards or guidelines, applicable code will prevail. In cases where edition of year is not indicated, current edition will apply.

2.1.1. 2022 California Building Code

2.1.2. 2022 California Plumbing Code

2.1.3. 2022 California Energy Code

2.1.4. 2022 California Green Building Standards Code

3. Sanitary/Vent System

3.1. System Description

3.1.1. The sanitary sewer system shall drain by gravity and will collect waste from all plumbing fixtures located within each building to a point of connection on the site, no further than five (5) feet beyond each building's foundation. These connection points will be indicated on the site/civil documents.

3.1.2. The sanitary waste and vent system will be designed as a conventional waste and vent system throughout the building.

3.1.3. Traps subject to infrequent use will be provided with ASSE 1018 or 1044 type trap primer valve to prevent sewer gases from entering building. Trap primers will be provided to all floor drains not receiving indirect waste.

3.2. Material

3.2.1. All sanitary and vent piping will be schedule 40 PVC DWV piping with solvent weld fittings.

3.2.2. All piping within an HVAC plenum space shall meet ASTM E84. Should any HVAC plenums be present, no-hub cast iron piping will be used in these spaces.

4. Grease Waste System

4.1. System Description

4.1.1. A dedicated grease waste system will convey effluent from all FOG (fats, oils, and grease) producing fixtures and equipment located in kitchens and bars to grease interceptors. Each restaurant and/or food kiosk will have its own grease interceptor.

4.1.2. The grease interceptors will be in ground passive tank interceptors. This type of interceptor works by reducing the velocity of the grease waste, allowing the grease to separate, with the solids falling to the bottom of the interceptor and the grease rising to the top. The liquid waste then passes through the interceptor.

4.1.3. The basis of design for the grease interceptor will be epoxy coated steel multi chambered tank as manufactured by Highland Tank. The interceptors shall be located under or along the back of house access roadways looping around the park to allow for easy maintenance.

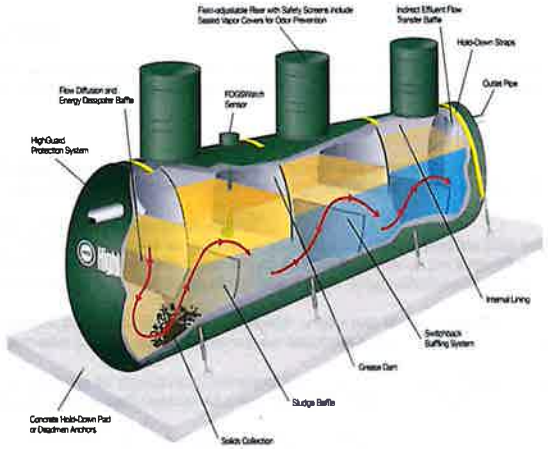


FIGURE 1: GREASE INTERCEPTOR

4.1.4. The grease interceptors shall be sized based on the local code requirements and that of the California Plumbing Code. The discharge from grease interceptors shall first pass through a sample basin and then connect to site/civil sanitary sewer. Sizing will be refined once equipment and fixture information is received from the food service consultant.

4.1.5. Civil utilities will connect to sanitary waste piping downstream of the grease interceptor.

4.1.6. In cases where the length of the grease waste line (main) exceeds 100' to the interceptor from grease producing waste the waste line will be heat traced and insulated to keep the grease waste from congealing. The intent will be to locate the interceptors so heat trace is not required on the project.

4.2. Material

4.2.1. Grease waste piping below grade shall be high performance coated cast iron pipe and fittings equal to that of Charlotte Pipe HP Edge. This piping will not only be able to withstand the high temperatures from items such as tilt kettles and dishwashers but will also be able to withstand corrosive waste from items such as beverage stations, making it an ideal product for kitchen waste applications.

4.2.2. Waste from food kiosks/carts will utilize PVC piping as these locations will not have any high temperature waste entering into the drainage system.

4.2.3. Vent piping shall be schedule 40 solid wall DWV PVC with solvent weld fittings.

4.2.4. All piping within an HVAC plenum space shall meet ASTM E84. Should any HVAC plenums be present, no-hub cast iron piping will be used in these spaces.

5. Storm Water System

5.1. System Description

5.1.1. All sloped roofs will discharge rainwater to perimeter gutters and downspouts, provided and indicated on the architectural documents. Should the downspouts connect to the civil utilities, the architect shall coordinate this directly with the civil engineer, without interface by the plumbing engineer.

5.1.2. For the flat roof areas, a storm water drainage system will be provided. Primary roof drains will convey the storm water drainage to a point of connection on the site, no further than five (5) feet beyond the building's foundation. These connection points will be indicated on the site/civil documents.

5.1.3. A secondary drainage system will be provided for the flat roofs. Scuppers will terminate through the parapet wall in a visible location as designed by the architect. Secondary roof drains will be provided where scuppers are not utilized, and the piping will terminate through the building wall approximately 18" above grade using a cast bronze down spout nozzle.

5.2. Material

5.2.1. Storm water piping above slab on grade shall be either service weight no-hub cast iron with standard duty couplings or solid wall schedule 40 PVC DWV.

5.2.2. Storm water piping below grade piping shall be schedule 40 solid wall DWV PVC with solvent weld fittings.

5.2.3. All piping within an HVAC plenum space shall meet ASTM E84. Should any HVAC plenums be present, no-hub cast iron piping will be used in these spaces.

6. Domestic Cold Water System

6.1. System Description

6.1.1. The domestic water service shall originate from a point of connection on the site approximately (5) feet from each building's footprint. The piping upstream of this will be indicated on the civil site drawings. The civil drawings shall indicate the piping routing around the site.

6.1.2. The water service will enter each building in a back of house room/space and be provided with a building shutoff valve. As the entire site will be protected with an RPZ type backflow preventer, it will be confirmed with the AHJ if additional backflow preventers per building are also required. Exp recommends they not be provided to reduce the resulting pressure loss from the device.

6.1.3. Backflow preventers will also be provided for specific connections to the potable water system including at various food service equipment, connections to mechanical equipment, connections to pool equipment, etc. Each of these devices will be located inside of a building.

6.1.4. Each building will not have individual water meters. Meters shall be provided on the water service(s) to the park and indicated on the civil drawings.

6.1.5. The park is in a freezing environment and all piping, valving and accessories located exterior to the building will be insulated to protected in such a way that they will not freeze.

6.1.6. It is anticipated that the site pressure will be adequate such that there is no need for any water booster pumps located in any buildings. A flow test will be required to confirm this.

6.1.7. Hose bibbs will be provided at flat roof levels having HVAC equipment on them to allow for maintenance. Additional hose bibbs will be provided exterior to the building at maximum of 100' on center. Hose bibbs on exterior of building shall be wall hydrant type encased in a stainless-steel type hinged enclosure.

6.1.8. Water hammer arrestors shall be provided to all groups of plumbing fixtures utilizing quick closing valve such as ice machines, ware washers, and clothes washers.

6.2. Materials

6.2.1. Piping shall be Type 'L' copper with Pro Press or soldered joints. Any piping located below ground or located within a block wall shall be wrapped to protect the piping from corrosion.

7. Domestic Hot Water System

7.1. System Description

7.1.1. Each building requiring hot water will be provided with its own water heating system. The vast majority of spaces will utilize tank type electric water heaters, which will be located in back of house spaces such as equipment rooms or janitor closets.

7.1.2. Areas with large hot water demand will be provided with heat pump or electric tank type water heaters, to include the Food service buildings (kitchens).

7.1.3. The heating system will be set at 140°F in kitchen/food service buildings. This temperature will be piped to all the kitchen equipment including dishwashers, 3-compartment scullery sinks, prep sinks, janitor's sinks and hand sinks. At the sinks not requiring 140°F water, such as hand sinks, a point-of-use thermostatic mixing valve will be provided at each fixture, located below it. This valve will be set at about 110°F to limit the hot water temperature.

7.1.4. In buildings where, there is no food preparation the water heating system will heat the water to 140°F and blend the water down to about 120° F for distribution. This lower temperature will eliminate the potential for scalding concerns.

7.1.5. Every public lavatory will be provided with a point of use ASSE 1070 mixing valve to limit the supply to a maximum of 110 degrees F.

7.1.6. Hot water systems will be provided with a hot water return system to minimize the wait for hot water delivery at each fixture.

7.1.7. The majority of systems utilizing hot water return will have a single hot water loop. These systems will be provided with a manual balancing valve located at the circulation pump to manually balance/control the system.

7.1.8. Each hot water return system will be provided with its own hot water return pump. The recirculation pumps will run based on a time clock and aquastats.

7.2. Materials

7.2.1. Piping material shall be the same as that of the cold water.

8. Reclaimed (non-potable) Water System

8.1. System Description

8.1.1. The reclaimed water service shall originate from a point of connection on the site approximately (5) feet from each building's footprint. The piping upstream of this will be indicated on the civil site drawings. The civil drawings shall indicate the piping routing around the site as well as the master meter.

8.1.2. The water service will enter each building in a back of house room/space and be provided with a building shutoff valve. As this is a non-potable water service, there should not be the need for any backflow prevention, but that will be confirmed with the AHJ.

8.1.3. This service will be piped around the site to use for irrigation as well as toilet and urinal flushing. As this is a separate water service from that of the domestic, this will indeed require a dual piped system on the site and within buildings having flushing fixtures.

8.1.4. The park is in a freezing environment and all piping, valving and accessories located exterior to the building will be insulated to protected in such a way that they will not freeze.

8.1.5. It is anticipated that the site pressure will be adequate such that there is no need for any water booster pumps located in any buildings. A flow test will be required to confirm this.

8.1.6. Water hammer arrestors shall be provided to all flush valves.

8.2. Materials

8.2.1. Piping shall be Type 'L' copper with Pro Press or soldered joints. Any piping located below ground or located within a block wall shall be wrapped to protect the piping from corrosion.

9. Natural Gas System

9.1. It is assumed that this will be an all electric project and natural gas will not be utilized.

9.1.1. Kitchens will utilize electric appliances.

9.1.2. HVAC heating will use electric heat when needed.

10. Medical Gas Systems

10.1. System Description

10.1.1. The Animal Care building will have operating and recovery facilities in which the facility wants piped medical gases. At this time, it is not yet known which gases are indeed desired, and input is needed from ownership. Provisions have been made for space allocation for medical air, vacuum, nitrous oxide, nitrogen, and oxygen.

10.1.2. All of the medical gas systems will be designed to meet NFPA 99, which is the standard for medical gases for humans. However, as there not a standard for animal care, NFPA 99 will be followed.

10.1.3. The vacuum will be served from a duplex tank mounted vacuum pump with separate floor mounted vacuum filter. The compressed air will be served from a duplex tank mounted air compressor with integral desiccant dryers. These will share a room with minimum measurements of 15'x12'.

10.1.4. A separate room will be provided (direct access to the exterior is recommended, though not required) to house the manifolds serving oxygen, nitrous, and nitrogen. The oxygen is estimated to require a 3x3 manifold and each the nitrous and the nitrogen are estimated to require a 1x1 manifold. Spare cylinders will also be kept within this room having minimum size of 9'x9'.

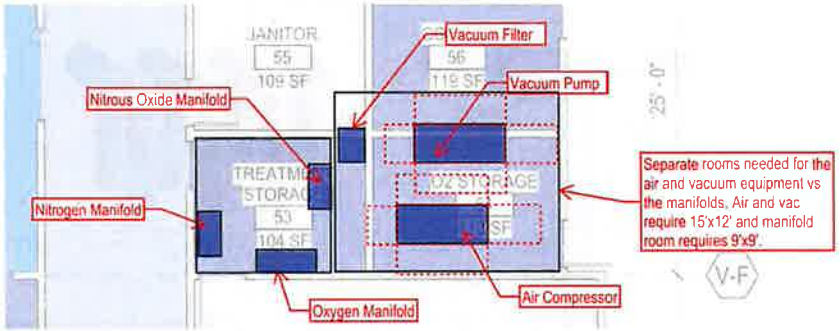


FIGURE 2: MEDICAL GAS SPACE REQUIREMENTS

10.1.5. Valves and alarms will be provided to meet NFPA 99.

10.2. Materials:

10.2.1. All materials will be copper piping that is capped for cleanliness and fittings bagged for cleanliness. Piping will be brazed.

11. Insulation

11.1. All cold, hot water, and hot water re-circulating piping shall be insulated with fiberglass.

11.2. All horizontal storm water piping, including the connection to the drain and the drain body, within the building shall be insulated with closed cell elastomeric.

11.3. All heat traced piping shall be insulated. At this time there is no anticipation that there will be any heat tracing on the project.

11.4. All fittings shall utilize pre-molded type insulation.

11.5. All exposed hot and cold water, and drain lines under handicapped lavatories shall be insulated, per ADA requirements, and be similar to TRUEBRO®.

11.6. Hot water pipe insulation thickness shall comply with the California Plumbing and Energy Codes.

11.7. Rigid fiberglass insulation will be covered with an all service jacket equal to Owens Corning Co. Fiberglass 25 ASJ vapor barrier jacketing. Fitting and valve covers will be pre-molded PVC covers with fiberglass insert.

12. Plumbing Fixtures

12.1. Plumbing fixtures will all be commercial grade vitreous china with low flow rates.

12.2. Public lavatories and flush valves shall be battery powered, sensor operated.

12.3. All plumbing fixtures will be of the water conserving variety.

12.4. Stop valves will be provided at all water consuming fixtures and equipment.

12.5. All fixtures and equipment operated by 'quick closing' valves will be provided with water hammer arrestors. This includes flush valves, ice machines, dishwashers, and other equipment operated by a solenoid valve.

FIGURE 3: WATER HAMMER ARRESTORS

12.6. All hose bibbs will be provided with integral vacuum breakers. Hose bibbs will be located on the perimeter of the building only where there are no site hydrants, provided by the civil engineer, within approximately 100 feet. Hose bibb locations shall be coordinated with the site hydrant location to ensure all areas are adequately covered.

12.7. Any kitchen equipment, janitors sinks, and other fixtures in which the valves can potentially be left open, will have check valves on the hot and cold water supplies to prevent cross over.

12.8. Exposed trap tailpieces, etc., will be tubular brass with a polished chrome finish. Concealed trap tailpieces can be PVC.

13. Identification

13.1. All piping, valves and equipment shall be provided with labels and flow direction.

13.2. Piping will be labeled with Craftmark, Seaton or equal markers at 20'-0" on center intervals. Color coding markers will be per OSHA Standards.

14. Hangers and Supports

14.1. All piping shall be supported from the building structure by means of approved hangers and supports.

14.2. Piping shall be supported to maintain required grading and pitching of lines, to prevent vibration and to secure piping in place, and shall be so arranged to provide for expansion and contraction.

14.3. Hangers in contact with copper will be either copper or PVC coated with electroplated rods, nuts and bolts.

14.4. Hanger associated materials and methods will be per MSS standards.

14.5. All piping and equipment shall be seismically braced and supported.

15. Component Specific Details

15.1. Food and Beverage

15.1.1. Water

- The 2019 Elk Grove Water District indicates the water hardness ranges from 18-220 grains, being from 1 gpg up to 13 gpg. The hardness ions (calcium and magnesium) are what cause spotting on glassware and scale buildup in water heaters. Each kitchen building will be provided with a water softener on the hot water system to eliminate scale buildup as well as eliminate the spotting.
- A mechanical room will be required within or adjacent to each kitchen to house the water softener, water heating equipment and hot water recirculation pump. Hot water within kitchens will be produced with heat pump or electric storage type water heaters. The water will be heated to 140°F which will serve all equipment. Point of use mixing valves will be provided at hand and prep sinks to limit the temperature to 110°F. The hot water shall be maintained through the use of hot water recirculation pumps.
- Heat pump or electric tank type water heater(s) will be utilized.
- Backflow preventers will be installed on the various pieces of equipment to ensure there is no cross contamination.
- Reclaimed water will be piped to flush valves on water closets and urinals.

15.1.2. Grease Waste Drainage System

- Buildings with kitchens will require grease interceptors to be located exterior of the building in a service area, accessible by pump trucks.
- Dedicated grease piping will extend to all floor drains, floor sinks, and equipment located within the kitchen. The lines will extend to the exterior of the building and discharge into a grease interceptor.
- Should there be any food preparation at Food kiosks they will not be provided with a grease waste drainage system.
- As food carts are portable and mostly self-contained, they will not be provided with grease waste piping.

15.1.3. Plumbing Fixtures

- The following plumbing fixtures shall be provided for employee usage in addition to the kitchen equipment:
  - Water closets
  - Lavatories
  - Service Sinks

15.2. Restrooms

15.2.1. Water

- Water will be plumbed to all plumbing fixtures throughout the building.
- A storage type electric water heater will be provided for lavatories (hand sinks) in toilet rooms and other sinks throughout the building.
- Reclaimed water will be piped to flush valves on water closets and urinals.

15.2.2. Sanitary Sewer

- A sanitary sewer will be piped to all of the plumbing fixtures and equipment located within the building.

15.3. Retail

15.3.1. Typically, there is not a requirement for plumbing within a retail building. However, should plumbing fixtures exist, the following will be followed.

15.3.2. Water

- Water will be plumbed to all plumbing fixtures throughout the building.
- A storage type electric water heater will be provided for lavatories (hand sinks) in toilet rooms and other sinks throughout the building.

15.3.3. Sanitary Sewer

- A sanitary sewer will be piped to all the plumbing fixtures and equipment located within the building.

15.3.4. No plumbing scope is anticipated for Retail Vendor Carts.

15.4. Animal Holding

15.4.1. Water

- Water will be provided at each plumbing fixture and pieces of equipment requiring water. Typically, in holding buildings there will be hose bibbs for washdown, a sink for animal food preparation, and water connected to the animal drinkers.
- The animal drinkers will have a backflow preventer connected upstream from them.
- Reclaimed water will potentially be piped to hose bibbs.

- A storage type electric water heater will be provided for sinks. Should there only be a single sink, an instantaneous electric water heater located under the fixture will be utilized instead of the tank type heater.

15.4.2. Sanitary Drainage

- A sanitary system will be connected to all plumbing fixtures and equipment within the building.
- Drains will be located/coordinated based on the type of animal it serves. Some holding pens/stall will not have drains in them, but instead directly outside of them in the keeper corridor. Others will have drains within the pen/stall.
- Some holding areas will be provided with solids interceptors to prevent items such as animal bedding (straw and/or saw dust) from entering the sewer system.
- The requirements for covered animal areas are being confirmed with the Authority Having Jurisdiction (AHJ).

15.5. Area Development

15.5.1. Food Carts

- The food cart could either be permanently installed or it can be movable.
- Domestic water will connect to the food cart via an in-ground yard hydrant. This hydrant will be located in a valve box located under the cart. It will be freeze-less style.
- A point-of-use electric water heater will be provided for a hand sink within the Food Cart. This shall be integral to the food cart and will not be reflected on the plumbing drawings.
- An in-ground box with lid, similar to a floor sink, will be used for the sanitary drainage. Once the food cart is in place, the waste hose from the sink will be dropped into the box for drainage. As this trap will be located within the frost depth, the piping shall be 'winterized' by blowing out the trap out with compressed air. A temporary plug can then be put in the tailpiece.
- The food cart will be hard plumbed for both water and sanitary to the civil piping utilities where required.

15.6. General and Support Buildings/Areas

15.6.1. Water

- Water will be plumbed to all plumbing fixtures throughout the building to include toilet rooms, break rooms, and hose bibbs/wall hydrants.
- A storage type electric water heater will be provided for lavatories (hand sinks) in toilet rooms and other sinks throughout the building provided with a hot water circulation system.
- Reclaimed water will be piped to flush valves on water closets and urinals.

15.6.2. Sanitary Sewer

- A sanitary sewer will be piped to all of the plumbing fixtures and equipment located within the building.

16. Building Space Requirements

16.1. The floor plans below identify the space requirements for the larger buildings. These are in addition to that for the medical gases shown in an image above.

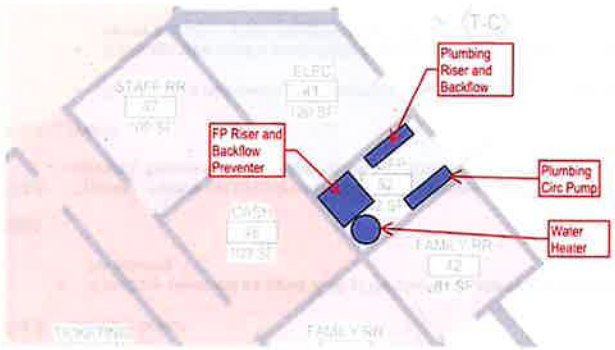


FIGURE 4: ENTRY BUILDING PLUMBING EQUIPMENT

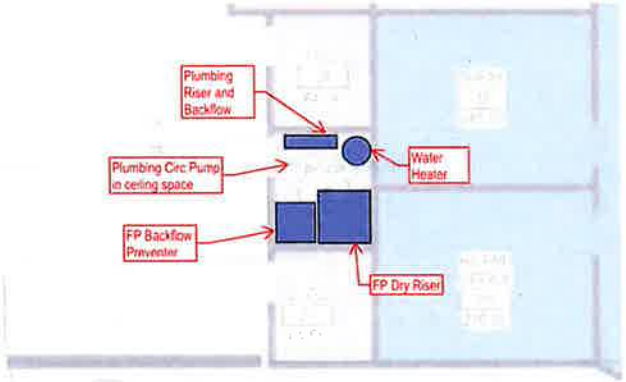
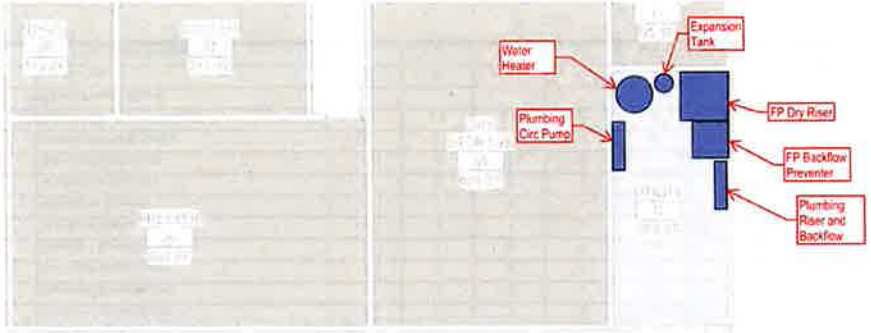


FIGURE 5: ENTRY BUILDING PLUMBING EQUIPMENT

FIGURE 6: LODGE BUILDING PLUMBING EQUIPMENT



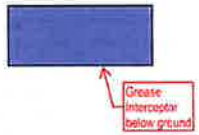


FIGURE 7: ANIMAL CARE BUILDING PLUMBING EQUIPMENT

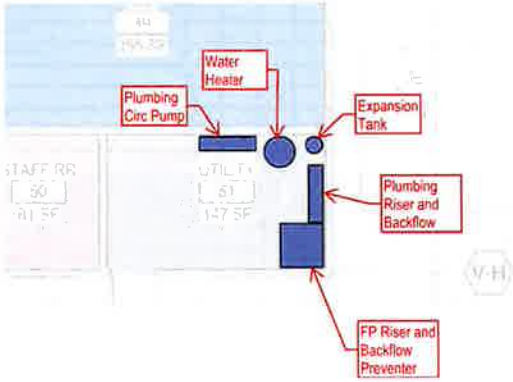


FIGURE 8: ANIMAL CARE BUILDING PLUMBING EQUIPMENT

17. Overall Project Loads

17.1. The chart below identifies the estimated loads for the entire project.

	ELECTRICAL DEMAND		TOTAL WATER DEMAND			SANITARY WASTE WATER DEMAND
	NORMAL CONNECTED KW	NORMAL DEMAND KW	POTABLE WATER (GALLONS PER DAY) WITHOUT FUTURE LSS RECOVERY	POTABLE WATER (GALLONS PER DAY) WITH FUTURE LSS RECOVERY	RECLAIMED WATER (GALLONS PER DAY)	WASTE WATER (GALLONS PER DAY)
Phase 1A & 1B Total	4,370	3,059	45,852	45,852	91,040	43,284
Phase 1C, 2-4 Total	5,774	7,100	127,921	40,167	58,193	126,187
OVERALL TOTAL	10,144	7,100	173,773	86,019	149,233	169,471

Breakdown of the above water numbers include the following:

	LSS			WASHDOWN			
	WITHOUT RECOVERY (GALLONS PER DAY)	WITH RECOVERY (GALLONS PER DAY)	FLUSHING WATER (GALLONS PER DAY)	INDOOR (GALLONS PER DAY)	OUTDOOR (GALLONS PER DAY)	LANDSCAPE IRRIGATION (GALLONS PER DAY)	PARKING AND STREET LANDSCAPE IRRIGATION (GALLONS PER DAY)
Phase 1A & 1B Total	13,746	13,746	12,530	5,108	19,411	38,698	32,931
Phase 1C, 2-4 Total	106,254	18,500	8,113	4,980	12,538	45,655	-
OVERALL TOTAL	120,000	32,246	20,643	10,088	31,949	84,353	32,931

Notes:
1. Flushing Water is included in the Potable Total Demand.
2. Indoor Washdown is included in the Potable Total Demand.
3. Outdoor Washdown is included in the Reclaimed Total Demand.
4. Irrigation is included in the Reclaimed Total Demand.
5. The LSS recovery is only an option for the future phases. The curent phases will not utilize recovery.

18. Building Loads

18.1. The charts below identify the estimated services for each building.

Phase 1a and 1b

BLDG #	BLDG Name	Water Demand GPM	Water Connect. Inches	Sewer Demand GPM	Sewer Connect. Inches	Storm Demand GPM	Storm Connect. Inches	Grease Trap Gallons
101	Guest Services/Restrooms/Ticketing	125	3	94	4	73	6	-
101	Retail	5	1	5	4	92	6	-
102	Education Entry Restrooms	150	3	113	6	8	3	-
103	The Lodge	150	3	113	6	187	8	2000
104	Events Pavilion	75	2.5	56		111	6	
201	Dwarf Mongoose Care Quarters	5	1	5	4	3	3	-
202	Giraffe Feeding Shelter Canopy	5	1	5	4	34	4	-
202	Giraffe Feeding Shelter Sales Room	150	3	113	6	2	3	-
203	Beer Garden Restrooms	150	3	113	6	12	3	-
204	Beer Service	15	1.25	15	4	4	3	-
205	Beer Service	15	1.25	15	4	4	3	-
206	Cheetah Care Quarters	5	1	5	4	28	4	-
207	Cheetah View Shelter	5	1	5	4	22	3	-
208	Fennec Fox Care Quarters	5	1	5	4	5	3	-
209	Lion View Shelter 1	5	1	5	4	41	4	-
210	Lion View Shelter 2	5	1	5	4	72	6	-
211	Meerkat Care Quarters	5	1	5	4	2	3	-
212	Rhino View Shelter 1	5	1	5	4	7	3	-
213	Rhino View Shelter 2	5	1	5	4	11	3	-
214	Rhino Encounter Shelter	5	1	5	4	14	3	-
215	Overnight Guest Duplex	8	1	8	4	14	3	-
215	Overnight Guest Duplex	8	1	8	4	14	3	-
215	Overnight Guest Duplex	8	1	8	4	14	3	-
216	Lion Care Quarters	5	1	5	4	50	4	-
217	Rhino Care Quarters	5	1	5	4	69	6	-
218	Giraffe Care Quarters	5	1	5	4	179	8	-
218	Overnight Guest Suite	8	1	8	4	22	3	-
219	Hoofstock Care Quarters	5	1	5	4	65	6	-
220	Savanna LSS	60	2.5	250	8	59	6	-
221	Walk In Browse Cooler							-
222	Hay Storage	5	1	5	-	8	3	-
223	Event Lawn Giraffe Feeding Shelter	5	1	5	4	2	3	-

BLDG #	BLDG Name	Water Demand GPM	Water Connect. Inches	Sewer Demand GPM	Sewer Connect. Inches	Storm Demand GPM	Storm Connect. Inches	Grease Trap Gallons
301	Flamingo LSS	60	2.5	250	8	22	3	
302	Flamingo Care Quarters/Brooder	5	1	5	4	34	4	-
303	Africa Aviary Care Quarters	5	1	5	4	9	3	-
304	Lvl 1: Vestibule	5	1	5	4	13	3	-
304	Lvl 2: Colobus Care Quarters	5	1	5	4	23	3	-
305	Okapi Care Quarters	5	1	5	4	34	4	-
306	Giant Tortoise Care Quarters	5	1	5	4	17	3	-
307	Multipurpose Room	125	3	94	4	16	3	-
307	Multipurpose Room	125	3	94	4	16	3	-
307	Multipurpose Room	125	3	94	4	16	3	-
308	Gelada LSS	60	2.5	250	8	17	3	
309	Klipspringer/Hyax Holding	5	1	5	4	7	3	-
310	Gelada View Shelter 2	5	1	5	4	23	3	-
311	Gelada View Shelter 1	5	1	5	4	20	3	-
312	Gelada Care Quarters	10	1.25	10	4	70	6	-
313	Train Depot	5	1	5	4	17	3	
314	Alligator Viewing Shelter 1	5	1	5	4	8	3	-
315	Alligator Viewing Shelter 2	5	1	5	4	8	3	-
316	Alligator & Sq. Monkey Care Quarters	5	1	5	4	25	3	-
317	Squirrel Monkey Viewing Shelter	5	1	5	4	16	3	-
318	Parrot Care Quarters	5	1	5	4	4	3	-
319	Play Area Restrooms & Lactation Room	150	3	113	6	10	3	-
320	Carousal Pavilion					23	3	
321	Lemur View Shelter 1	5	1	5	4	12	3	-
322	Lemur View Shelter 2	5	1	5	4	16	3	-
323	Lemur Care Quarters	5	1	5	4	25	3	-
324	Quarantine & Nutrition Center)	150	3	113	6	343	8	2000
701	Maintence Shed/Shops	15	1.25	15	4	136	6	-
703	Containerized Fodder System					2	3	
703	Walk In Browse Cooler							-
703	Roof	5	1	5	4	23	3	-

BLDG #	BLDG Name	Water Demand GPM	Water Connect. Inches	Sewer Demand GPM	Sewer Connect. Inches	Storm Demand GPM	Storm Connect. Inches	Grease Trap Gallons
801	Admin Modular 1	125	3	94	4	0	3	-
801	Admin Modular 2	125	3	94	4	0	3	-
801	Admin Modular 3	125	3	94	4	0	3	-
801	Admin Modular 4	125	3	94	4	0	3	-
801	Admin Modular 5	125	3	94	4	0	3	-
801	Admin Modular 6	125	3	94	4	0	3	-
801	Restrooms - Prefabricated	150	3	113	6	16	3	-
802	Animal Staff Modular 1	125	3	94	4	0	3	-
802	Animal Staff Modular 2	125	3	94	4	0	3	-

Full Buildout

BLDG #	BLDG Name	Water Demand GPM	Water Connect. Inches	Sewer Demand GPM	Sewer Connect. Inches	Storm Demand GPM	Storm Connect. Inches	Grease Trap Gallons
105	Administration / Staff Support & Offices (2-stories)	125	3	94	4	74	6	-
401	Changing Exhibits	20	1.5	20	4	39	6	-
401	Otter Care Quarters & LSS	5	1	5	4	23	4	-
401	California Fresh Waters Indoor Exhibits	20	1.5	20	4	145	8	-
401	Beaver Care Quarters	5	1	5	4	9	3	-
402	Education & Classrooms	125	3	94	4	70	6	-
402	California Deserts Indoor Exhibits	20	1.5	20	4	47	6	-
403	Capybara Care Quarters	5	1	5	4	6	3	-
404	Grizzly Bear View Shelter	5	1	5	4	47	6	-
405	Bobcat Care Quarters	5	1	5	4	8	3	-
406	Restrooms - California	150	3	113	6	14	4	-
407	Food Kiosk	10	1.25	10	4	4	3	750
408	Big Horned Sheep Care Quarters	5	1	5	4	12	3	-
409	Rescue & Rehab Facility	50	2	38	4	86	8	-
410	Grizzly Bear Care Quarters & LSS	5	1	5	4	39	6	-
501	African Ape Viewing	5	1	5	4	31	6	-
502	Hippo Springs View Shelter	5	1	5	4	14	4	-
503	Hippo River View Shelter	5	1	5	4	19	4	-
504	Food & Restroom Kiosk	10	1.25	10	4	6	3	750
505	Overnight Arrival Building	50	2	38	4	16	4	-
505	Accomodation 1	8	1	8	4	2	3	-
505	Accomodation 2	8	1	8	4	2	3	-
505	Accomodation 3	8	1	8	4	2	3	-
505	Accomodation 4	8	1	8	4	2	3	-
505	Accomodation 5	8	1	8	4	2	3	-
505	Accomodation 6	8	1	8	4	2	3	-
505	Accomodation 7	8	1	8	4	2	3	-
506	Hippo Care Quarters	50	2	38	4	78	6	-
507	Hippo+Tiger Filtration	150	3	600	12	66	6	-
508	African Ape CQ	5	1	5	4	7	3	-
509	Wild Dog / Hyena CQ	5	1	5	4	29	4	-
510	Rhino Breeding / Hoofstock CQ	5	1	5	4	44	6	-
601	Wallace Line Gallery Indoor Exhibits	20	1.5	20	4	148	8	-
601	Komodo Dragon/Red Panda C.Q.	5	1	5	4	11	3	-
602	Clouded Leopard Care Quarters	5	1	5	4	23	4	-
603	Tiger View Shelter	5	1	5	4	37	6	-
604	Tiger Care Quarters	5	1	5	4	27	4	-
605	Aviary Care Quarters 1	5	1	5	4	6	3	-
606	Restrooms - Asia	150	3	113	4	8	3	-
606	Aviary Viewing Shelters	5	1	5	4	23	4	-
606	Food Kiosk	10	1.25	10	4	4	3	750
607	North Water Recovery	60	2.5	250	8	37	6	-
608	Asian Ape View Shelter	5	1	5	4	16	4	-
609	Asian Ape Care Quarters	5	1	5	4	58	6	-
610	Cassowary Care Quarters	5	1	5	4	2	3	-
611	Australian Aviary Care Quarters	5	1	5	4	2	3	-
612	Clouded Leopard View Shelter	5	1	5	4	11	3	-
702	Maintenca Shed/Shops	15	1.25	15	4	66	6	-
705	Greenhouse 2	50	2	38	4	30	6	-
706	Greenhouse 1	50	2	38	4	30	6	-
707	Event Storage	-	-	-	-	-	-	-

FIRE PROTECTION ENGINEERING
BASIS OF DESIGN
SCHEMATIC DESIGN SUBMISSION
OCTOBER 6, 2023
FOR PRICING
NEW ZOO AT ELK GROVE

1. Executive Summary

1.1. The fire protection systems in each building will be designed as indicated below. Depending on the requirements of each building, as outlined in the Component Specific Details section, not every building will be provided with every service.

2. Applicable Codes, Guidelines and Standards

1.1. The fire protection systems will be designed in accordance with all applicable codes, guidelines, and standards as noted below.

1.1.1. 2022 California Building Code

1.1.2. 2022 California Fire Code

1.1.3. Local building and fire protection ordinances and adopted revisions to the codes

1.1.4. NFPA Standards

- NFPA 1 – Fire Code
- NFPA 13 – Standard for the Installation of Sprinkler Systems.
- NFPA 14 – Standard for the Installation of Standpipe and Hose Systems
- NFPA 20 – Standard for the installation of Stationary Pumps for Fire Protection
- NFPA 22 – Standard for Water Tanks for Private Fire Protection
- NFPA 24 – Standard for the Installation of Private Fire Service Mains and Their Appurtenances
- NFPA 25 – Standard for the Inspection, Testing and Maintenance of Water-Based Fire Protection Systems.
- NFPA 72 – National Fire Alarm Code.
- NFPA 101 – Life Safety Code

2.1.1. NFPA 2001 – Clean Agent Fire Extinguishing Systems

3. Design Criteria

3.1. Seismic requirements: This project is in seismic design category D. Equipment shall be seismically braced, and systems shall be seismically supported as required per code.

3.2. All areas of the facility will be designated with an occupancy hazard classification (light hazard thru extra hazard Group II) in accordance with NFPA 13.

3.3. All design densities and hazard classifications will have to be reviewed with insurance company for compliance. Design densities and hazard classifications are subject to change.

3.4. Building areas such as the lobby, animal viewing areas, lounge, restaurant seating areas, and meeting rooms are classified as light hazard. Fitness area, restaurant service areas, kitchen, animal housing areas and mechanical/electrical equipment rooms are classified as Ordinary Hazard Group 1. Loading dock, storage and retail, are classified as Ordinary Hazard Group 2.

3.5. Areas designated as light hazard will be hydraulically designed for the operation of 1,500 square feet at 0.10 gpm/sq.ft.to provide a minimum flow of approximately 22.5 gpm per sprinkler. The hose stream allowance shall be 100 gpm with a minimum water supply duration of 30 minutes.

3.6. Areas designated as ordinary hazard group 1 will be hydraulically designed for the operation of 1,500 square feet at 0.15 gpm/sq.ft.to provide a minimum flow of approximately 19.5 gpm per sprinkler. The hose stream allowance shall be 250 gpm with a minimum water supply duration of 60 minutes.

3.7. Areas designated as ordinary hazard group 2 will be hydraulically designed for the operation of 1,500 square feet at 0.20 gpm/sq.ft.to provide a minimum flow of approximately 26.0 gpm per sprinkler. The hose stream allowance shall be 250 gpm with a minimum water supply duration of 60 minutes.

3.8. Areas designated as extra hazard group 1 will be hydraulically designed for the operation of 2,500 square feet at 0.30 gpm/sq.ft.to provide a minimum flow of approximately 30.0 gpm per sprinkler. The hose stream allowance shall be 500 gpm with a minimum water supply duration of 90 minutes.

3.9. Sprinkler service mains and risers shall include exterior PIV with tamper switch, and fire department connections

4. Quality Level

4.1. Equipment selection, specification and installation practices will reflect a commitment to long term longevity of system, ease of maintenance and energy efficiency.

4.2. All equipment and material used will be listed for Fire Protection use by UL.

4.3. The intended level of quality of all wiring devices will be specification commercial grade.

4.4. Proposed manufacturers of major equipment will be as indicated below.

TABLE 1: PROPOSED MANUFACTURERS

Equipment	Manufacturers
Sprinklers	Viking, Reliable, Tyco, Globe
Sprinkler Piping	Allied, Wheatland, Bullmoose
Fittings	Victaulic, Anvil, Ward
Valves	NIBCO, Milwaukee, Grinnell, Victaulic
Fire Hose Valves	Potter-Roemer, Elkhart Brass, Croker, American Fire Hose Cabinet Co.
Dry Riser Assemblies	Viking, Victaulic, Reliable, Tyco, Total PAC
Fire Alarm Devices	System Sensor, Notifier, Siemens, Simplex

5. Systems and Equipment

5.1. Wet Sprinkler Systems

5.1.1. System Description

- Each building will be protected throughout with hydraulically calculated sprinkler systems which, except for special protection needs, will be wet pipe systems. All areas of the buildings will be protected, including electrical rooms (switchgear, transformers, generators, closets, etc.), and mechanical rooms. Sprinkler protection may be omitted for electrical rooms and vaults with 2 hour rated enclosures that comply with NFPA 13.

5.1.2. System Design Criteria

- The sprinkler system for each building will be designed and installed in accordance with NFPA 13 and local requirements.
- The water supply requirements for the sprinkler system shall be determined using hydraulic calculations based on the density/area method of NFPA 13. All systems will be hydraulically calculated with a computer calculation program using the Hazen-Williams method.
- The system demand will be based on the most remote area for the most demanding building hazard. The following design densities will be used for each hazard classification:

TABLE 2: WET-PIPE SPRINKLER SYSTEM DESIGN DENSITIES

Hazard Classification	Design Density, gpm per sq. ft.	Minimum Remote Area, sq. ft.
Light Hazard	0.10	1,500
Ordinary Hazard, Group 1	0.15	1,500
Ordinary Hazard, Group 2	0.20	1,500
Extra Hazard, Group 1	0.30	2,500

5.1.3. Distribution

- A minimum of one sprinkler system zone will be provided per floor level. Maximum wet-pipe sprinkler system protection area is 52,000 sq. ft. per zone.
- Additional sprinkler zones may be provided as required to ensure sprinkler zones match fire alarm system / smoke zones.

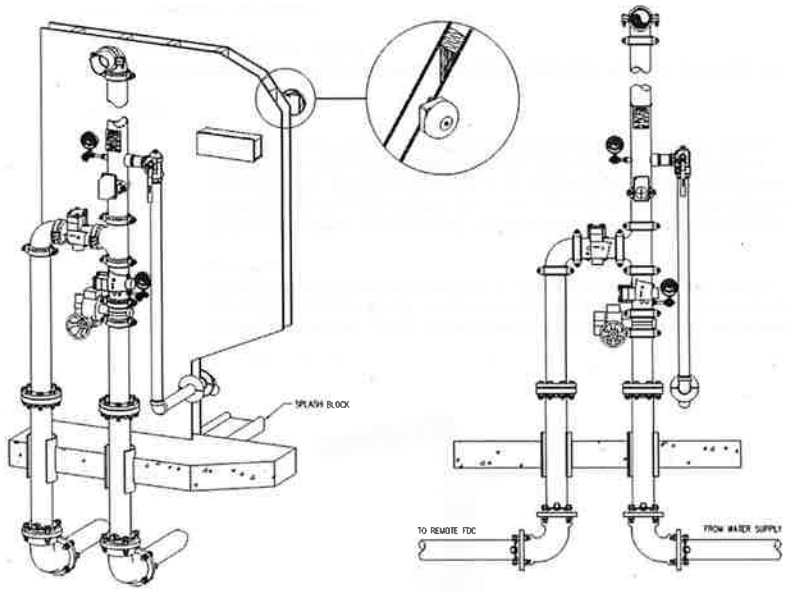


FIGURE 1: TYPICAL SPRINKLER RISER

- The piping for the wet pipe sprinkler system will be black steel. Piping 2" and smaller in size will be Schedule 40 with threaded joints. Piping larger than 2" will be Schedule 10 with welded or rolled groove couplings or Schedule 40 with welded or threaded couplings.
- All sprinklers will be of quick response type if available for the application. The type of sprinkler used in specific areas will be selected by EXP and the Architect. Concealed sprinklers will be installed in areas of high visibility and quality of finishes. Recessed sprinklers will be installed in areas with suspended ceilings. Pendent or upright sprinklers will be installed in areas without ceilings. Upright sprinklers will be installed in parking levels. Sidewall sprinklers will be used only when other types cannot be used.
- Intermediate temperature sprinklers will be installed in elevator machine rooms, mechanical rooms, electrical rooms, exterior locations, kitchens and near heat sources.
- Sprinkler protection is typically required at the bottom and top of each elevator hoist way

per NFPA 13. However, enclosed, non-combustible elevator shafts that do not contain combustible hydraulic fluid shall not require the sprinkler at the bottom of the hoist way. In addition, the sprinkler at the top of the hoist way is permitted to be omitted where hoist way for passenger elevators is noncombustible or limited-combustible and the car enclosure materials meet the requirements of ASME A17.1, Safety Code for Elevators and Escalators.

5.2. Dry Sprinkler Systems

5.2.1. System Description

- Areas where freezing may occur will be protected with a dry sprinkler system. Dry pendent or sidewall sprinklers may be used on the wet system where appropriate in lieu of a dry system. A dry pipe system will be required for protection of the Porte cochere and entry canopy area.

5.2.2. System Design Criteria

- Dry sprinkler systems will be designed and installed in accordance with NFPA 13. All systems will be hydraulically calculated with a computer calculation program using the Hazen-Williams method (or Darcy-Weisbach where applicable based on size of system).
- The system demand will be based on the most remote area for the most demanding building hazard. For dry-pipe systems, the area of sprinkler operation shall be increased by 30% without revising the design density. The following design densities will be used for each hazard classification:

TABLE 3: DRY-PIPE SPRINKLER SYSTEM DESIGN DENSITIES

Hazard Classification	Design Density, gpm per sq. ft.	Minimum Remote Area, sq. ft.
Light Hazard	0.10	1,950
Ordinary Hazard, Group 1	0.15	1,950
Ordinary Hazard, Group 2	0.20	1,950
Extra Hazard, Group 1	0.30	3,250

- The pipe sizing for the systems will be as required to satisfy the hydraulic demand with a minimum safety factor of 10 psi.

5.2.3. Distribution

- A 4ft x 4ft room will be required to house the dry pipe valve for each zone. Dry-pipe valve room shall be heated or constructed such that temperature of room is maintained above 40 degrees Fahrenheit. All system valving, switches and drains will be located in this room.

FIGURE 2: TYPICAL DRY-PIPE VALVE ASSEMBLY

- The piping for the dry sprinkler system will be black steel. Piping 2" and smaller in size will be Schedule 40 with threaded joints. Piping larger than 2" will be Schedule10 with welded or rolled groove couplings or Schedule 40 with welded or threaded couplings.
- Subject to fire department approval, sprinkler protection for exterior projections may be permitted to be omitted where the canopy is constructed with materials that are noncombustible, limited-combustible, or fire retardant-treated wood as defined in NFPA 703, and provided the area below the canopy is not used for storage of combustible materials such as combustible furniture below canopy for occupant use.

5.3. Fire Service

5.3.1. A fire flow test will be required to determine the available water flow rate and pressures from the public waterworks system.

5.3.2. Equipment and Material

- A 4" fire bulk supply main will supply water to each building.
- Tamper switches shall be provided on all valves. The sprinkler system will be monitored by the building's fire alarm system per NFPA 72. An alarm bell shall be provided at an

accessible location on the outside wall. All components will be UL listed for the application.

- One 5" Storz or one 4-way Siamese fire department connections shall be provided for each building over 2000 SQ FT. FDCs shall be sited at an accessible location as approved by the AHJ. FDCs are required to be located at a maximum of 100-feet from the nearest fire hydrant.
- All components will be UL listed for the application and for system maximum working pressures.

5.3.3. Distribution

- Inside the building, the piping will be Schedule 40 with flanged or welded joints or Schedule 10 with roll-grooved couplings.

6. Corrosive Environments

6.1. Corrosive environments are those in which the air or water quality is such that accelerated degradation of the system components are likely. Corrosive environments and corrosive services shall utilize piping and supports that will not corrode or oxidize due to the environment in which they are located nor due to the fluid contained within the piping. These locations include:

6.1.1. Fountain piping services

6.1.2. Outdoors or any areas exposed to environmental conditions.

6.2. All piping in corrosive environments shall be epoxy coated

6.3. All sprinklers in exterior corrosive areas shall have nickel coating.

6.4. All piping services in corrosive environments utilizing flanged connections shall be provided with 316L stainless steel hardware including bolts, nuts and washers.

6.5. All piping supports, and hangers shall be 316L stainless steel

7. Testing Criteria

7.1. Sprinkler System

7.1.1. The contractor will notify the authority having jurisdiction and Owner's representative of the time and date of the test.

7.1.2. The contractor will test the piping systems as per NFPA. The sprinkler piping shall be isolated and tested at 200 psi or 50 psi over the system working pressure, whichever is greater for two hours.

8. Appendix

Appendix A: Estimated Fire Protection Requirements – Phase 1a and 1b

BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
101	Guest Services/Restrooms/Ticketing	650	4
101	Retail		
102	Education Entry Restrooms	650	4
103	The Lodge	650	4
104	Events Pavilion	650	4
201	Dwarf Mongoose Care Quarters		
202	Giraffe Feeding Shelter Canopy		
202	Giraffe Feeding Shelter Sales Room		
203	Beer Garden Restrooms	650	4
204	Beer Service		
205	Beer Service		
206	Cheetah Care Quarters		
207	Cheetah View Shelter		
208	Fennec Fox Care Quarters		
209	Lion View Shelter 1		
210	Lion View Shelter 2		
211	Meerkat Care Quarters		
212	Rhino View Shelter 1		
213	Rhino View Shelter 2		
214	Rhino Encounter Shelter		
215	Overnight Guest Duplex	650	4
215	Overnight Guest Duplex	650	4
215	Overnight Guest Duplex	650	4
216	Lion Care Quarters	650	4
217	Rhino Care Quarters	650	4
218	Giraffe Care Quarters	650	4
218	Overnight Guest Suite	650	4
219	Hoofstock Care Quarters	650	4
220	Savanna LSS		
221	Walk In Browse Cooler		
222	Hay Storage	650	4
223	Event Lawn Giraffe Feeding Shelter		

Estimated Fire Protection Requirements – Phase 1a and 1b (Con'd)

BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
301	Flamingo LSS		
302	Flamingo Care Quarters/Brooder		
303	Africa Aviary Care Quarters		
304	Lvl 1: Vestibule		
304	Lvl 2: Colobus Care Quarters		
305	Okapi Care Quarters		
306	Giant Tortoise Care Quarters		
307	Multipurpose Room	650	4
307	Multipurpose Room		
307	Multipurpose Room		
308	Gelada LSS		
309	Klipspringer/Hyax Holding		
310	Gelada View Shelter 2		
311	Gelada View Shelter 1		
312	Gelada Care Quarters		
313	Train Depot		
314	Alligator Viewing Shelter 1		
315	Alligator Viewing Shelter 2		
316	Alligator & Sq. Monkey Care Quarters		
317	Squirrel Monkey Viewing Shelter		
318	Parrot Care Quarters		
319	Play Area Restrooms & Lactation Room	650	4
320	Carousel Pavilion		
321	Lemur View Shelter 1		
322	Lemur View Shelter 2		
323	Lemur Care Quarters		
324	Quarantine & Nutrition Center)	650	4
701	Maintence Shed/Shops	650	4
703	Containerized Fodder System		
703	Walk In Browse Cooler		
703	Roof		

Estimated Fire Protection Requirements – Phase 1a and 1b (Con'd)

BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
801	Admin Modular 1	650	4
801	Admin Modular 2	650	4
801	Admin Modular 3	650	4
801	Admin Modular 4	650	4
801	Admin Modular 5	650	4
801	Admin Modular 6	650	4
801	Restrooms - Prefabricated	650	4
802	Animal Staff Modular 1	650	4
802	Animal Staff Modular 2	650	4

Appendix B: Estimated Fire Protection Requirements – Full Buildout

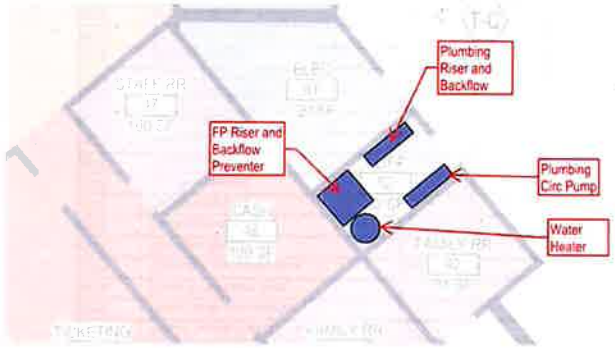
BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
105	Administration / Staff Support & Offices (2 stories)	650	4
401	Changing Exhibits	650	4
401	Otter Care Quarters & LSS		
401	California Fresh Waters Indoor Exhibits	650	4
401	Beaver Care Quarters		
402	Education & Classrooms	650	4
402	California Deserts Indoor Exhibits	650	4
403	Capybara Care Quarters		
404	Grizzly Bear View Shelter		
405	Bobcat Care Quarters		
406	Restrooms - California		
407	Food Kiosk		
408	Big Horned Sheep Care Quarters		
409	Rescue & Rehab Facility	650	4
410	Grizzly Bear Care Quarters & LSS		
501	African Ape Viewing		
502	Hippo Springs View Shelter		
503	Hippo River View Shelter		
504	Food & Restroom Kiosk		
505	Overnight Arrival Building	650	4
505	Accomodation 1		
505	Accomodation 2		
505	Accomodation 3		
505	Accomodation 4		
505	Accomodation 5		
505	Accomodation 6		
505	Accomodation 7		
506	Hippo Care Quarters		
507	Hippo+ Tiger Filtration		
508	African Ape CQ	650	4
509	Wild Dog / Hyena CQ		
510	Rhino Breeding / Hoofstock CQ	650	4

Estimated Fire Protection Requirements – Full Buildout (Con'd)

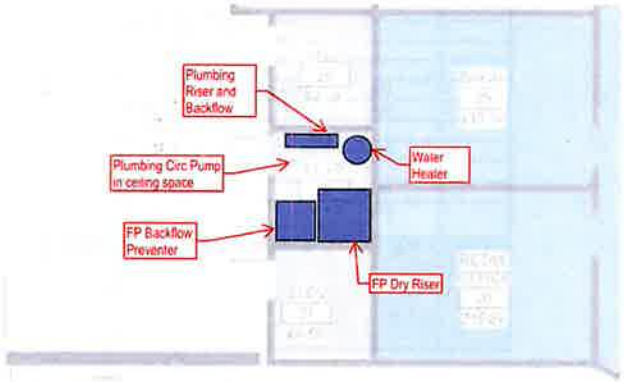
BLDG #	BLDG Name	Fire Sprinkler Demand GPM	Fire Sprinkler Connect. Inches
601	Wallace Line Gallery Indoor Exhibits	650	4
601	Komodo Dragon/Red Panda C.Q.		
602	Clouded Leopard Care Quarters		
603	Tiger View Shelter		
604	Tiger Care Quarters		
605	Aviary Care Quarters 1		
606	Restrooms - Asia		
606	Aviary Viewing Shelters		
606	Food Kiosk		
607	North Water Recovery		
608	Asian Ape View Shelter		
609	Asian Ape Care Quarters	650	4
610	Cassowary Care Quarters		
611	Australian Aviary Care Quarters		
612	Clouded Leopard View Shelter		
702	Maintenca Shed/Shops	650	4
705	Greenhouse 2		
706	Greenhouse 1		
707	Event Storage	650	4

Appendix C: Building Space Requirements

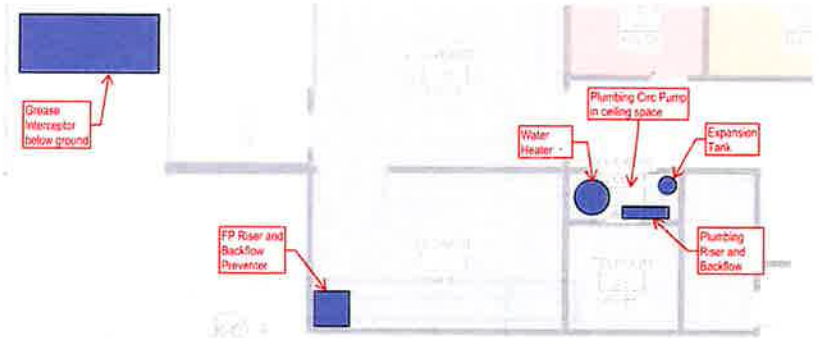
Entry Building – Fire Protection Equipment:



Entry Building – Fire Protection Equipment:

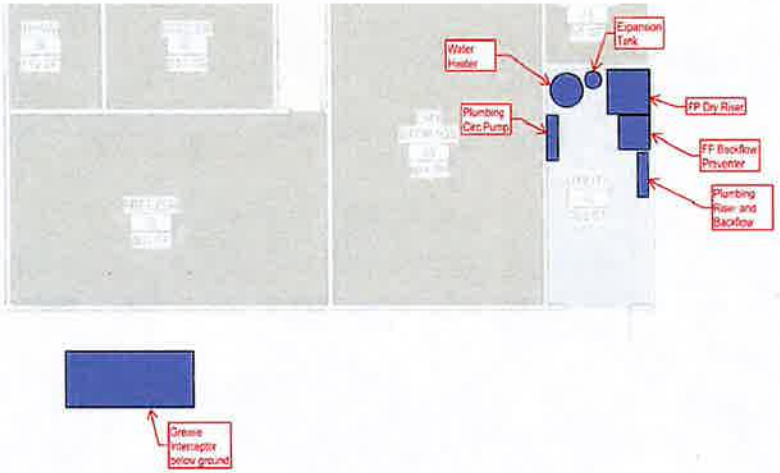


Lodge Building – Fire Protection Equipment:

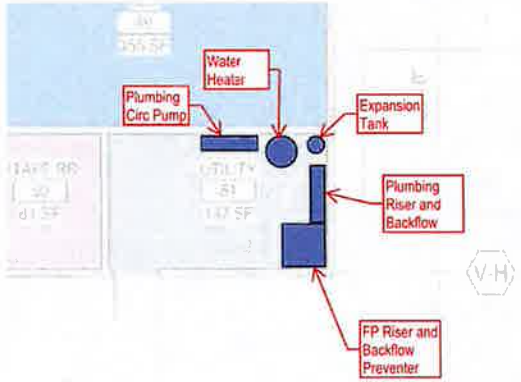


Appendix D: Building Space Requirements (Continued)

Animal Care Building – Fire Protection Equipment:



Animal Care Building – Fire Protection Equipment:



TECHNOLOGY DESIGN
BASIS OF DESIGN
SCHEMATIC DESIGN SUBMISSION
OCTOBER 6, 2023
NEW ZOO AT ELK GROVE

1. Executive Summary

1.1. The Technology Design scope of work shall be comprised of the Structured Cabling Systems (SCS), Backbone and horizontal cabling design and specification.

1.2. The systems included in the Technology Design scope of work shall support the operational needs of the facility. This shall be completed by providing available, robust, and flexible systems that allow for moves, additions and changes to each system while minimizing the operational impact to the facility (downtime).

1.3. The systems included in the Technology Design scope of work shall be designed to support both phase 1 and phase 2 of the project. The construction of phase 2 shall have no impact on the operation of phase 1.

2. Applicable Codes, Guidelines & Standards

2.1. Design will conform to the following Codes, Standards and Guidelines. Where differences arise between any Code, Standard or Guideline, Codes shall prevail. In all cases, where an edition number is not indicated, the current accepted edition will be used.

2.1.1. 2022 California Building Code

2.1.2. NFPA 70 2014 Edition (National Electrical Code)

2.1.3. ANSI/TIA Standards

2.1.4. IEEE Standards

2.1.5. ISO/IEC Standards

2.1.6. BICSI Standards

2.2. Equipment selections will be from manufacturers whose products comply will current industry accepted design and testing standards.

3. Telecommunications Utilities Routing

3.1. Park Wide Incoming Utilities

3.1.1. The primary incoming communication utility connections shall be routed to building 1.1.1, Administration / Staff Support & Offices, for connection to the primary Campus MDF. This utility connection shall be routed through dedicated conduit from the utility right of way to the building main point of entry.

3.2. Distribution Duct Bank

3.2.1. A distribution duct bank shall provide a pathway for the fiber optic backbone cabling. The distribution duct bank shall connect to the Campus MDF at two geographically separate locations. The distribution duct bank shall follow the same routing around the perimeter service road as other utilities.

3.2.2. The distribution duct shall consist of two (2) 4" conduits routed at a minimum of 24" below finished grade.

3.2.3. The primary fiber optic backbone shall consist of a single 288-Strand Single Mode Outside plant rollable ribbon fiber optic cable.

4. Telecommunications Equipment Rooms

4.1. Park Wide Systems Equipment Room (PSER)

4.1.1. The PSERs shall serve as distribution points for voice, data, audio, video, IPTV, and security systems transitioning between backbone fiber optic cabling and horizontal fiber optic cabling.

4.1.2. PSERs shall be located within buildings identified as node building and provided with fiber optic connections to the primary fiber optic backbone loop.

4.1.3. PSERs shall be located as close as possible to the back side of facility where maintenance access has least impact on operational impact.

4.1.4. PSERs shall have interior dimensions of 150 square feet dedicated for the use of distribution equipment. The PSER shall easily fit 2 cabinets.

4.1.5. Ceiling height shall not be below 10 feet.

4.1.6. Fire sprinklers and water/liquid source pipes shall not be run over PSER

4.1.7. PSERs shall be provided with a single 36-inch, 8-foot tall, metal, weather tight door with no windows.

4.2. Intermediate Data Frame (IDF)

4.2.1. IDF rooms shall be utilized when a facility is too large for a single PSER to reach all areas of the facility due to cable distance limitations.

4.2.2. IDFs shall have interior dimensions of 120 square feet dedicated for the use of distribution equipment. The IDF shall easily fit 1 cabinet.

4.2.3. IDFs shall have cameras monitoring room entrance and each cabinet row.

4.2.4. Ceiling height shall not be below 10 feet.

4.2.5. Fire sprinklers and water/liquid source pipes shall not be run over IDF.

4.2.6. IDFs shall be provided with a single 36-inch, 8-foot tall, metal, weather tight door with no windows.

4.3. Electrical

4.3.1. The electrical panel serving each PSERs shall be dedicated exclusively to the equipment located in the ER/TR being served.

4.3.2. Telecommunications equipment mounted in equipment racks typically requires 30A, 120V circuits.

4.3.3. PSERs shall be supplied with both 120v and 208v

4.3.4. Convenience power receptacles shall be located throughout each PSER shall be located on a shared 20A, 120V circuit.

4.3.5. A minimum equivalent of 50 foot-candles as measured from 36 inches above finished floor (AFF) shall be provided.

4.3.6. PSERs with 10 or more cabinets shall have room level UPS, rooms with less than 10 cabinets shall have UPS in each cabinet.

4.3.7. Life safety equipment shall have 20 minutes of UPS power if backed by a generator and 1 hour of UPS if there is no generator.

4.4. Mechanical

4.4.1. The HVAC system shall maintain the temperature of the room at 61-81 degrees Fahrenheit +/- with a relative humidity between 40-55%.

4.4.2. Maintain positive pressure with a minimum of one air change per hour in each PSER.

4.4.3. All HVAC equipment serving PSER's shall be backed up by generator power.

4.4.4. The atmosphere within each PSER shall be dust-free.

5. Structured Cabling System (SCS)

5.1. The Structured Cabling System shall provide a structured information transportation environment designed for efficient adaptation to constantly changing connectivity requirements.

5.2. Backbone / Riser Cabling

5.2.1. The backbone/ riser structured cabling system shall provide high bandwidth connectivity between PSERs.

5.2.2. Optical Fiber Cabling

5.2.2.1. All outside plant backbone optical fiber shall be rollable ribbon OSP cabling.

5.2 2.2. All inside plant riser optical fiber cabling shall be tight buffered cabling.

5.2 2.3. Single mode optical fiber cabling shall be 9/125µm (OS1) cabling terminated on LC style duplex connectors.

5.2 3. Copper Cabling

5.2.3.1. Copper cabling shall be Category 3 unshielded twisted pair (UTP) multi-pair cabling. All backbone copper cabling shall be terminated on 8P8P modular jacks (1 pair per jack).

5.2.3.2. Backbone / Riser cabling shall be plenum rated cabling where required.

5.3. Backbone/ Riser Cabling Allocations

5.3.1. PSER minimum connectivity shall be:

5.3.1.1. 12 Strands Single Mode Optical Fiber: 6 strand serving as the A-Link and 6 strands serving as the B-Link.

5.3.1.2. Each primary PSER link to the backbone fiber optic loop shall be provided with an A-Link traveling the loop clockwise to the Campus MDF and a B-Link traveling the loop counterclockwise to the campus MDF. Using this architecture each 12-Strand building connection shall occupy 6-strands of backbone fiber optic cable.

5.4. Horizontal Cabling

5.4.1. Copper

5.4.1.1. The base horizontal copper data cabling shall consist of Category 6 4-Pair Unshielded Twisted Pair (UTP) cabling.

5.4.1.2. All Category 6 UTP/STP cabling shall be terminated on 8P8P modular jacks.

5.4.1.3. All channels shall adhere to EIA/TIA and BICSI standards and shall maintain a manufacturer's 25 year channel guarantee.

5.4.2. Horizontal Cabling Allocations:

5.4.2.1. Refer to the Components breakouts (beginning in Section 10) for more detailed information regarding Horizontal Cabling allocations.

5.5. Equipment Cabinets/ Enclosures / Racks

5.5.1. All equipment racks and enclosures shall contain a standard EIA 19" wide equipment mounting channel with universal mounting holes pattern of 5/8" – 5/8" – 1/2" spacing.

5.5.2. Equipment racks shall have a minimum of 45 RMU of available equipment mounting space.

5.5.3. Equipment racks shall include power distribution, vertical and horizontal cable management and completely grounding packages. Enclosed equipment cabinet shall include ventilation and cool air routing properties.

5.5.4. Equipment racks devoted to network connectivity such as edge and workgroup equipment, switching, terminations and cross connects shall be open two-post frame equipment racks manufactured by Chatsworth (CPI).

5.5.5. Equipment racks devoted to surveillance management, recording and storage equipment, terminations and cross connects shall be open four-post equipment racks manufactured by Middle Atlantic.

5.5.6. Equipment racks devoted to audio/visual equipment shall typically be open frame four post.

5.5.7. Wall-mounted equipment racks shall be used in buildings where a full-sized TR is not feasible. Wall-mounted equipment rack shall have a minimum 18 RMU of available equipment mounting space.

5.6. Cable Pathways

5.6.1. Cable pathways within the telecommunications equipment and server rooms shall be ladder tray and fiber ducts. Ladder tray shall be routed above the equipment racks and along any wall containing cable connectivity and terminations.

5.6.2. Cable pathways through hallways with accessible ceiling and accessible horizontal chases shall be a combination of j-hooks and wire cable basket tray.

5.6.2.1. J-hooks shall be mounted a maximum of 4'-0" apart.

5.6.2.2. J-hooks shall be manufactured in a fashion that does not deform the cabling as cabling is laid into the cable pathway system.

5.6.2.3. Wire basket tray shall be a minimum of 6" wide and 4" deep.

5.6.3. Cable pathways above hard ceiling and through inaccessible horizontal chases shall be conduit.

5.6.4. All sleeves through fire-rated wall shall be sealed with a UL listed fire stop system.

5.6.5. Telecommunications and Surveillance cable pathways shall be shared cable pathways.

6. Voice Over IP (VOIP) Telephony System

6.1. The VOIP system shall provide voice switching, voicemail, an automated attendant and automatic call distribution for the hotel.

6.2. VOIP Basic Feature Set

6.2.1. Automated Call Distribution

6.2.2. Automated Attendant

6.2.3. Voice Mail

6.2.4. Call forwarding

6.2.5. Desk/ Wireless Handset Coupling

6.3. VOIP Handsets

6.3.1. Handsets throughout the park shall consist of single line, four line and eight line handsets.

7. Wireless Systems

7.1. Wireless Network

7.1.1. A wireless facility network shall provide internet access to staff throughout the park.

7.1.2. A wireless guest network shall provide internet access to guests throughout the park.

7.1.3. The wireless guest network shall be completely isolated from the park's facility network and shall only provide internet access to park guests.

7.1.4. Coverage shall be 100% saturation. Wireless access point drops shall be cabled back to the nearest ER/TR for termination.

7.1.5. Approximate quantity of wireless access point (WAP) devices to be installed is 175.

7.2. Cellular Reinforcement/ Mobile Radios

7.2.1. A manufacturer agnostic bi-directional amplifier (BDA) infrastructure shall be installed throughout the park. BDA antennas shall be distributed to provide 100% saturation.

7.2.2. Space shall be allocated for BDA head-end equipment and manufacturer equipment in the ER/EF.

7.2.3. A separate fiber optic infrastructure shall be provided to each building for use in the distributed antenna system.

8. Audio/ Visual Systems

8.1. Community Access Television (CATV)

8.1.1. All CATV connections shall be IP based and utilize the fiber optic and category cabling backbone.

8.2. Digital Signage

8.2.1. The digital signage system shall include the following capabilities:

8.2.1.1. Schedulable Content Display

8.2.1.2. Branding/ Event Broadcasting

8.2.1.3. Facility Specific Content Push (to mobile devices)

8.2.1.4. Wayfinding

8.2.1.5. Interactive Touchscreen Capabilities

8.2.2. Digital signage monitors shall be located throughout the common spaces and concentrated at entrances/ exits to the park and at guest relations locations.

8.3. Background Music/ Overhead Paging Systems

8.3.1. The background music/ overhead paging system shall consist of a distributed audio system providing coverage throughout the park, zoned as per owner requirements.

8.3.2. The background music/ overhead paging system shall be IP based.

8.3.3. Background music content shall be provided via an owner-provided music source, satellite feeds and local content players.

8.3.4. Speakers shall be a combination of in-ground and pendant-mounted devices, designed to blend into the features and themes.

8.4. Control Systems

8.4.1. A centralized control system shall provide user control of the audio/ visual systems.

8.4.2. Control interfaces shall consist of wall and podium/desk mounted touch screen panels. Panels shall be configurable to allow customizable control levels and password access to control functions.

8.4.3. The control system shall manage a minimum of the following by zone: volume, content selection and content activation. The meeting room control shall include local source control.

9. Security Systems

9.1. The security systems shall consist of video surveillance and electronic access control.

9.2. Surveillance System

9.2.1. The surveillance system shall consist of a video management system managing IP cameras.

9.2.2. A dedicated surveillance network shall be created. The surveillance data network, management appliances and network video storage appliances shall be located in the datacenter.

9.2.3. Camera cabling shall be routed to PSERs for access to the surveillance network.

9.2.4. Surveillance camera cabling shall consist of Category 6 UTP cabling routed from each camera to the nearest PSER for termination and cross connection to the surveillance data network. The surveillance structured cabling system shall be designed to meet TIA-568-C.2 cabling standards to allow for seamless transition to IP cameras.

9.2.5. Cameras shall be powered via Power Over Ethernet (POE) utilizing POE injectors or POE-enabled switches.

9.2.6. The surveillance system provides documentation of a period in time. Surveillance camera images are used in legal cases, establish liability and act as a physical deterrent.

9.2.7. Minimum surveillance coverage (specific camera counts shall be determined by the size and shape of areas being covered and shall be determined by the documentation needs of each individual space):

9.2.7.1. Refer to the Components Descriptions (beginning with Section 10) for more detailed information regarding the minimum surveillance coverage.

9.2.8. The surveillance system shall process and record all video. Specific individual camera stream resolution, image recording rate and storage duration shall be determined by the owner during a later design phase.

9.2.8.1. The minimum camera resolution shall be 5 megapixels with cameras being recorded at 30 images per second.

9.2.8.2. The video management system (VMS) shall manage both live and stored surveillance video.

9.2.8.3. Video analytic capabilities shall include but not limited to: object counting, area intrusion, directional motion, loitering detection, left object and object removal.

9.2.8.4. Video exporting via a commonly playable file format.

9.2.9. Monitoring and Control:

9.2.9.1. Each monitoring station shall include (2) 21" LCD monitors, a keyboard and mouse.

9.3. Electronic Access Control (EAC) System

9.3.1. The access control system shall consist of door hardware restricting access to authorized personnel only via proximity cards/badges, pin codes and biometric data.

9.3.2. The system shall allow access to individual doors based on personnel status, time of day, or event scheduling and shall create a record of authorized and unauthorized attempts to access controlled doors.

9.3.3. All access controlled doors shall include two card readers: one controlling access and located on the unsecure side of the door and a second card reader monitoring egress.

9.3.4. The EAC system shall integrate into the surveillance VMS. The events within the EAC system shall trigger camera steering, recording, and tagging of surveillance video. The EAC and surveillance systems shall operate as a single cohesive system.

9.3.5. The EAC system shall be IP based.

9.3.6. Access cards shall be 125 kHz proximity cards.

9.3.7. Door Control Panels and EAC Servers

9.3.7.1. The electronic access control servers dedicated to the park EAC system shall be located in the datacenter.

9.3.7.2. Individual door controllers shall be located either above the door being controlled or in the nearest PSER.

9.3.7.3. Door hardware requiring power shall be power either via Power Over Ethernet (PoE) or via dedicated power supplies located in the nearest PSER.

9.3.8. Electronic Access Control Scope

9.3.8.1. Refer to the Components Descriptions (beginning with Section 10) for more detailed information regarding the minimum surveillance coverage.

10. Component Specific Details

10.1. Food and Beverage

10.1.1. Voice and Data System

10.1.1.1. An IDF or PSER room shall be provided to house the incoming telecommunications service, telecommunications equipment backboard, and telecommunications equipment racks. Room size shall be as indicated on the Technology Design (TD) floor plans.

10.1.1.2. Voice, Data and POS horizontal cables shall be connected to the parkwide communications network.

10.1.1.3. Voice and Data outlets shall be located as follows:

10.1.1..3.1. Office Space: Voice and Data connections at each work station / desk

10.1.1..3.2. POS Station: Voice and Data outlet for Phone and POS

10.1.1..3.3. General kitchen areas: Voice outlets for wall phones

10.1.1..3.4. General back of house areas: Voice outlets for wall phones

10.1.2. Surveillance System

10.1.2.1. Closed Circuit Television (CCTV) equipment shall be housed in the telecommunications equipment rack and mounted to the telecommunications equipment backboard as required. All CCTV camera power supplies shall be mounted to the telecommunications equipment backboard.

10.1.2.2. CCTV Cameras shall be located as follows:

10.1.2..2.1. All POS locations

10.1.2..2.2. All cash handling locations

10.1.2..2.3. All drop safe locations

10.1.2..2.4. Queue lines

10.1.2..2.5. All CCTV cameras shall be monitored in the security office. Queue line cameras to be viewed in kitchen area for staffing purposes.

10.1.3. Access Control System:

10.1.3.1. Access to all Back of House (BOH) areas and rooms shall be controlled. Multiple BOH rooms in one common BOH area shall be controlled from the centrally located access door or primary access point.

10.1.3.2. The local access control devices shall be connected to the parkwide access control system.

10.1.3.3. Access to the following Back of House (BOH) areas shall be controlled:

10.1.3..3.1. All cash handling, counting and storage locations

10.1.3..3.2. Service entrances

10.1.3..3.3. Restricted utility areas

10.2. Restrooms

10.2.1. Voice and Data System

10.2.1.1. A PSER room shall be provided to house the incoming telecommunications service, telecommunications equipment backboard, and telecommunications equipment racks. Room size shall be as indicated on the Technology Design (TD) floor plans.

10.2.1.2. Voice horizontal cables shall be connected to the parkwide communications network.

10.2.1.3. Voice and Data outlets shall be located as follows:

10.2.1..3.1. General back of house areas: Voice outlets for wall phones

10.2.2. Surveillance System

10.2.2.1. Closed Circuit Television (CCTV) equipment shall be housed in the telecommunications equipment rack and mounted to the telecommunications equipment backboard as required. All CCTV camera power supplies shall be mounted to the telecommunications equipment backboard.

10.2.2.2. CCTV Cameras shall be located as follows:

10.2.2..2.1. General area coverage

10.2.2..2.2. Facing guests at area entry

10.2.2..2.3. Facing guests at area exit

10.2.2..2.4. All CCTV cameras shall be monitored in the security office.

10.2.3. Access Control System:

10.2.3.1. Access to all Back of House (BOH) areas and rooms shall be controlled. Multiple BOH rooms in one common BOH area shall be controlled from the centrally located access door or primary access point.

10.2.3.2. The local access control devices shall be connected to the parkwide access control system.

10.2.3.3. Access to the following Back of House (BOH) areas shall be controlled:

10.2.3..3.1. Service entrances

10.2.3..3.2. Restricted utility areas

10.3. Retail

10.3.1. Voice and Data System

10.3.1.1. A PSER room shall be provided to house the incoming telecommunications service, telecommunications equipment backboard, and telecommunications equipment racks. Room size shall be as indicated on the Technology Design (TD) floor plans.

10.3.1.2. Voice horizontal cables shall be connected to the parkwide communications network.

10.3.1.3. Voice and Data outlets shall be located as follows:

10.3.1..3.1. Office Space: Voice and Data connections at each work station / desk

10.3.1..3.2. POS Station: Voice and Data outlet for Phone and POS

10.3.1..3.3. General kitchen areas: Voice outlets for wall phones

10.3.1..3.4. General back of house areas: Voice outlets for wall phones

10.3.2. Surveillance System

10.3.2.1. Closed Circuit Television (CCTV) equipment shall be housed in the telecommunications equipment rack and mounted to the telecommunications equipment backboard as required. All CCTV camera power supplies shall be mounted to the telecommunications equipment backboard.

10.3.2.2. CCTV Cameras shall be located as follows:

10.3.2..2.1. General area coverage

10.3.2..2.2. Facing guests at area entry

10.3.2..2.3. Facing guests at area exit

10.3.2..2.4. All CCTV cameras shall be monitored in the security office.

10.3.3. Access Control System:

10.3.3..1.1. Access to all Back of House (BOH) areas and rooms shall be controlled. Multiple BOH rooms in one common BOH area shall be controlled from the centrally located access door or primary access point.

10.3.3..1.2. The local access control devices shall be connected to the parkwide access control system.

10.3.3.2. Access to the following Back of House (BOH) areas shall be controlled:

10.3.3..2.1. All cash handling, counting and storage locations

10.3.3..2.2. Service entrances

10.3.3..2.3. Restricted utility areas

10.4. Animal Holding

10.4.1. Voice and Data System

10.4.1.1. An IDF or PSER room shall be provided to house the incoming telecommunications service, telecommunications equipment backboard, and telecommunications equipment racks. Room size shall be as indicated on the Technology Design (TD) floor plans.

10.4.1.2. Voice and data horizontal cables shall be connected to the parkwide communications network.

10.4.1.3. Voice and Data outlets shall be located as follows:

10.4.1..3.1. General phone in holding areas

10.4.1..3.2. Safety phone at designated holding areas.

10.4.1..3.3. General outlets provided at workstations and specialized equipment locations as required.

10.4.2. Surveillance System

10.4.2.1. Closed Circuit Television (CCTV) equipment shall be housed in the telecommunications equipment rack and mounted to the telecommunications equipment backboard as required. All CCTV camera power supplies shall be mounted to the telecommunications equipment backboard.

10.4.2.2. CCTV Cameras shall be located as follows:

10.4.2..2.1. Animal holding areas.

10.4.2..2.2. Specialty holding areas including but not limited to indoor habitats, safety shelters and designated birthing locations.

10.4.2..2.3. On-Stage Performance Areas

10.4.2..2.4. All general space and back of house areas shall be monitored at the main security office. All onstage performance area cameras shall be monitored in the control room.

10.4.3. Access Control System:

10.4.3.1. Access to all Back of House (BOH) areas and rooms shall be controlled. Multiple BOH rooms in one common BOH area shall be controlled from the centrally located access door or primary access point.

10.4.3.2. The local access control devices shall be connected to the parkwide access control system.

10.5. Area Development

10.5.1. Voice and Data System

10.5.1.1. Area Development areas will be served by a PSER room in a building adjacent to the area to house the incoming telecommunications service, telecommunications equipment backboard, and telecommunications equipment racks. Room size shall be as indicated on the Technology Design (TD) floor plans.

10.5.1.2. Voice horizontal cables shall be connected to the parkwide communications network.

10.5.1.3. Voice and Data outlets shall be located as follows:

10.5.1..3.1. General back of house areas: Voice outlets for wall phones

10.5.2. Surveillance System

10.5.2.1. Closed Circuit Television (CCTV) equipment shall be housed in the telecommunications equipment rack and mounted to the telecommunications equipment backboard as required. All CCTV camera power supplies shall be mounted to the telecommunications equipment backboard.

10.5.2.2. CCTV Cameras shall be located as follows:

10.5.2..2.1. General area coverage

10.5.2..2.2. Facing guests at area entry

10.5.2..2.3. Facing guests at area exit

10.5.2..2.4. All CCTV cameras shall be monitored in the security office.

10.5.3. Access Control System:

10.5.3.1. Access to all Back of House (BOH) areas and rooms shall be controlled. Multiple BOH rooms in one common BOH area shall be controlled from the centrally located access door or primary access point.

10.5.3.2. The local access control devices shall be connected to the parkwide access control system.

10.5.3.3. Access to the following Back of House (BOH) areas shall be controlled:

10.5.3..3.1. Service entrances

10.5.3..3.2. Restricted utility areas

11. Appendix

Appendix A: Low Voltage Total Fiber Optic Strand Count By Building – Phase 1a & 1b

BLDG #	BLDG Name	Telecom Strands
101	Guest Services/Restrooms/Ticketing	12
101	Retail	12
102	Education Entry Restrooms	0*
103	The Lodge	12
104	Events Pavilion	12
201	Dwarf Mongoose Care Quarters	12
202	Giraffe Feeding Shelter Canopy	0*
202	Giraffe Feeding Shelter Sales Room	12
203	Beer Garden Restrooms	0*
204	Beer Service	12
205	Beer Service	12
206	Cheetah Care Quarters	12
207	Cheetah View Shelter	0*
208	Fennec Fox Care Quarters	12
209	Lion View Shelter 1	0*
210	Lion View Shelter 2	0*
211	Meerkat Care Quarters	12
212	Rhino View Shelter 1	0*
213	Rhino View Shelter 2	0*
214	Rhino Encounter Shelter	0*
215	Overnight Guest Duplex	12
215	Overnight Guest Duplex	12
215	Overnight Guest Duplex	12
216	Lion Care Quarters	12
217	Rhino Care Quarters	12
218	Giraffe Care Quarters	12
218	Overnight Guest Suite	0*
219	Hoofstock Care Quarters	0*
220	Savanna LSS	0*
221	Walk In Browse Cooler	0*
222	Hay Storage	0*
223	Event Lawn Giraffe Feeding Shelter	0*
301	Flamingo LSS	12
302	Flamingo Care Quarters/Brooder	12
303	Africa Aviary Care Quarters	0*
304	Lvl 1: Vestibule	12
304	Lvl 2: Colobus Care Quarters	12
305	Okapi Care Quarters	12
306	Giant Tortoise Care Quarters	12

*Building will be served by network rack in a nearby building

Low Voltage Total Fiber Optic Strand Count By Building – Phase 1a & 1b (Con'd)

BLDG #	BLDG Name	Telecom Strands
307	Multipurpose Room	12
307	Multipurpose Room	12
307	Multipurpose Room	12
308	Gelada LSS	12
309	Klipsringer/Hyax Holding	12
310	Gelada View Shelter 2	0*
311	Gelada View Shelter 1	0*
312	Gelada Care Quarters	12
313	Train Depot	0*
314	Alligator Viewing Shelter 1	0*
315	Alligator Viewing Shelter 2	0*
316	Alligator & Sq. Monkey Care Quarters	12
317	Squirrel Monkey Viewing Shelter	0*
318	Parrot Care Quarters	12
319	Play Area Restrooms & Lactation Room	0*
320	Carousel Pavilion	0*
321	Lemur View Shelter 1	0*
322	Lemur View Shelter 2	0*
323	Lemur Care Quarters	0*
324	Quarantine & Nutrition Center)	12
701	Maintence Shed/Shops	12
703	Containerized Fodder System	0*
703	Walk In Browse Cooler	0*
703	Roof	0*
801	Admin Modular 1	12
801	Admin Modular 2	12
801	Admin Modular 3	12
801	Admin Modular 4	12
801	Admin Modular 5	12
801	Admin Modular 6	12
801	Restrooms - Prefabricated	0*
802	Animal Staff Modular 1	12
802	Animal Staff Modular 2	12

*Building will be served by network rack in a nearby building

Appendix B: Low Voltage Total Fiber Optic Strand Count By Building – Full Buildout

BLDG #	BLDG Name	Telecom Strands
105	Administration / Staff Support & Offices (2-stories)	12
401	Changing Exhibits	0*
401	Otter Care Quarters & LSS	0*
401	California Fresh Waters Indoor Exhibits	12
401	Beaver Care Quarters	0*
402	Education & Classrooms	12
402	California Deserts Indoor Exhibits	12
403	Capybara Care Quarters	0*
404	Grizzly Bear View Shelter	0*
405	Bobcat Care Quarters	12
406	Restrooms - California	12
407	Food Kiosk	0*
408	Big Horned Sheep Care Quarters	12
409	Rescue & Rehab Facility	12
410	Grizzly Bear Care Quarters & LSS	12
501	African Ape Viewing	12
502	Hippo Springs View Shelter	0*
503	Hippo River View Shelter	0*
504	Food & Restroom Kiosk	0*
505	Overnight Arrival Building	12
505	Accomodation 1	0*
505	Accomodation 2	0*
505	Accomodation 3	0*
505	Accomodation 4	0*
505	Accomodation 5	0*
505	Accomodation 6	0*
505	Accomodation 7	0*
506	Hippo Care Quarters	12
507	Hippo+ Tiger Filtration	0*
508	African Ape CQ	12
509	Wild Dog / Hyena CQ	12

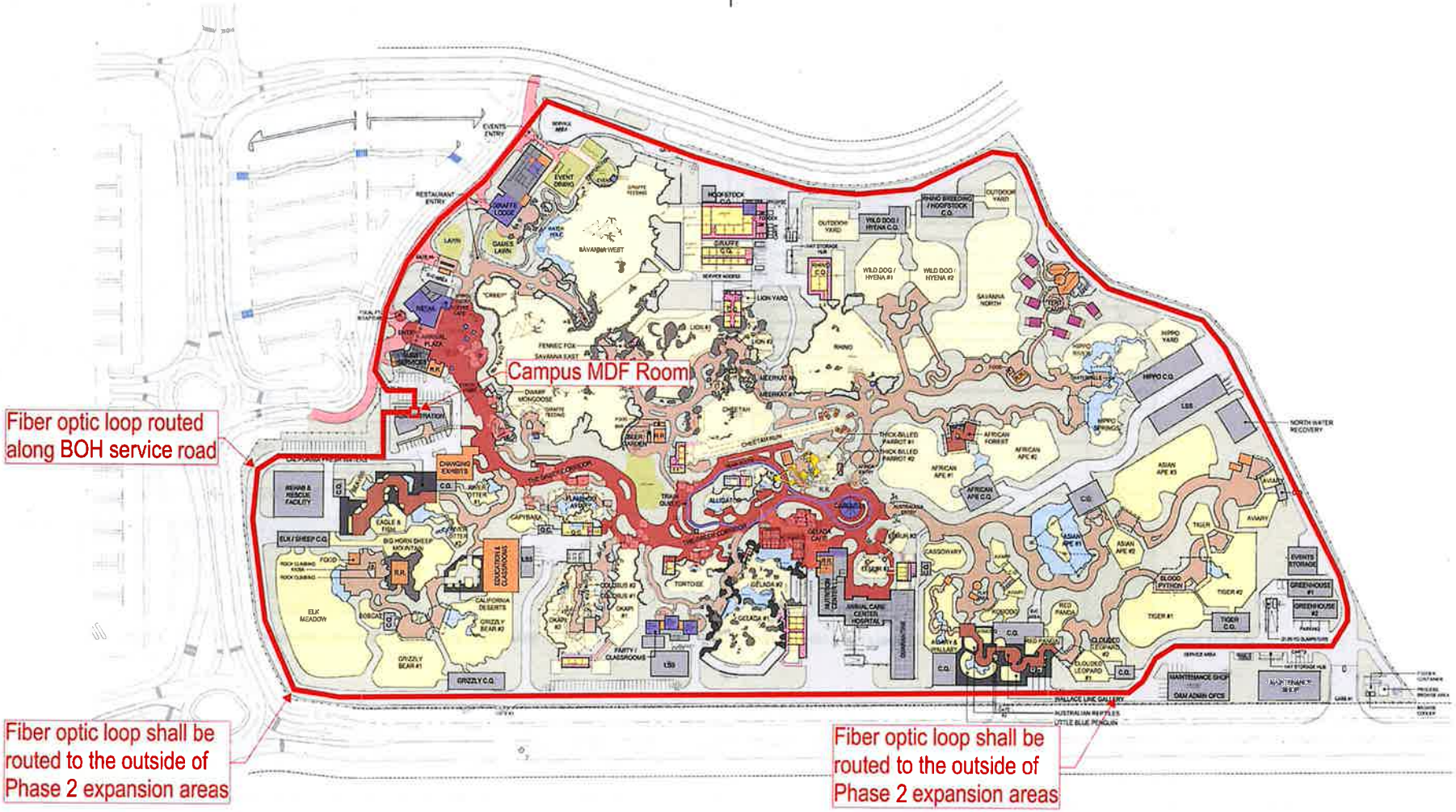
*Building will be served by network rack in a nearby building

Low Voltage Total Fiber Optic Strand Count By Building – Full Buildout (Con'd)

BLDG #	BLDG Name	Telecom Strands
510	Rhino Breeding / Hoofstock CQ	0*
601	Wallace Line Gallery Indoor Exhibits	12
601	Komodo Dragon/Red Panda C.Q.	0*
602	Clouded Leopard Care Quarters	12
603	Tiger View Shelter	0*
604	Tiger Care Quarters	12
605	Aviary Care Quarters 1	12
606	Restrooms - Asia	0*
606	Aviary Viewing Shelters	0*
606	Food Kiosk	12
607	North Water Recovery	0*
608	Asian Ape View Shelter	0*
609	Asian Ape Care Quarters	12
610	Cassowary Care Quarters	0*
611	Australian Aviary Care Quarters	12
612	Clouded Leopard View Shelter	0*
702	Maintence Shed/Shops	12
705	Greenhouse 2	0*
706	Greenhouse 1	0*
707	Event Storage	12

*Building will be served by network rack in a nearby building

Appendix C: Low Voltage Site Plan



Appendix D: Low Voltage Responsibility Matrix

Legend
S = Specify
D = Layout and Design
F = Furnish
I = Install
P = Provide / Furnish & Install
T = Terminate
C = Coordinate

	exp	Architect	General Contractor	Electrical Contractor	Low-Voltage Contractor	Owner	AV Designer	Ride Vender	Ride Photo Vendor
Supporting Systems									
1. Back boxes	S/D			P					
2. Conduit	S/D			P					
3. Cable Tray / Ladder Rack	S/D			P					
4. Trenching	S/D			P					
5. Concrete Patching		S	P						
6. Painting of all exposed Conduit, Junction Boxes, Enclosures, Hardware and Brackets	S/D	C	P						
Voice and Data System									
1. Structured Cabling System (SCS) Permanent links (All Systems Listed Below)	S/D				P				
2. Patch Panels / Outlets	S/D				P				
3. Equipment Racks	S/D				P				
4. Terminations	S/D				P				
5. Patch Cables						P			
6. Station Cables						P			
7. Data Switches	D					S/P			
8. UPS	D					S/P			
9. Workstations	D					S/P			

10. IP Phones	S/D					P			
12. Point Of Sale Servers and Point Of Sale Stations / Equipment		D				S/P			
13. TimeClocks	S/D					P			
13. Wireless Intercom System	S/D				P				
13. Wireless Intercom Remote Antenna Locations	S/D				P				

CCTV

1. Structured Cabling System (SCS) Permanent links (All Systems Listed Below)	S/D				P				
	exp	Architect	General Contractor	Electrical Contractor	Low-Voltage Contractor	Owner	AV Designer	Ride Vender	Ride Photo Vendor
2. Patch Panels / Outlets									
3. Terminations									
4. Patch Cables									
5. CCTV Cameras									
6. CCTV Licenses									
7. Commissioning / Aiming / Programing	S				P	C			

Electronic Access Control

1. Access Control Panels / Power Supplies	S/D				P				
2. Network Connections	S/D				P				
3. Door Hardware Cabling	S/D			P					
4. Door Hardware	C	S/D	P						
5. Licenses	S				P	C			
6. Commissioning / Aiming / Programing	S				P	C			

Wireless Access Points (WAP)

1. Structured Cabling System (SCS) Permanent links	S/D				P	C			
2. Electrical Connections	S/D			P		C			
3. Wireless Access Points (Active Equipment)	C	C				S/P			
4. Mounting hardware, External Antennas, Antenna cables, Enclosures and Accessories	C					S/P			
5. Commissioning / Programing / Aiming	C					S/P			
6. Headend Equipment						S/P			

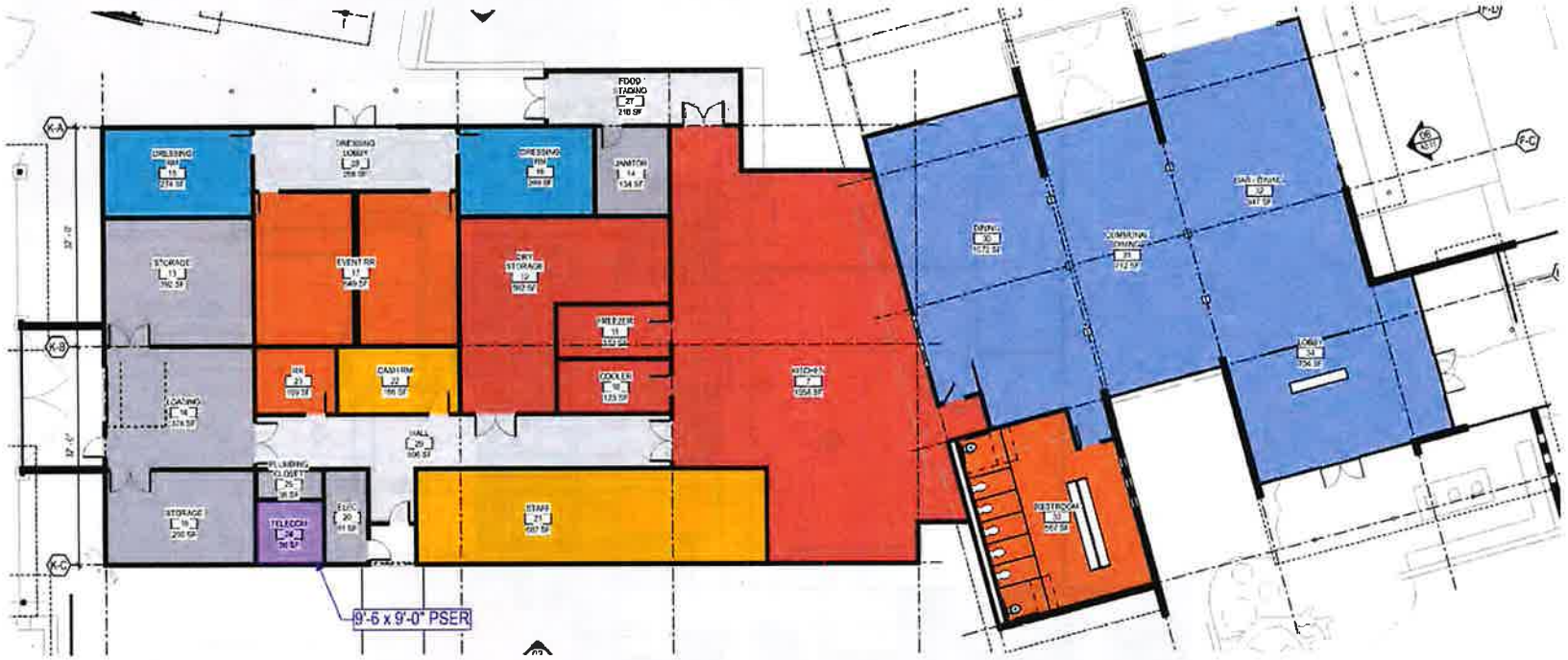
	exp	Architect	General Contractor	Electrical Contractor	Low-Voltage Contractor	Owner	AV Designer	Ride Vender	Ride Photo Vendor
Fiber Distribution and Racks									
1. Fiber Termination/Testing									
2. Fiber Optic Cables									
1. MDF/IDF Equipment Racks									
Audio Systems									
1. Wire Management (Cable Tray, Vertical Wire Management)	s						S/D/P		
2. Equipment Racks							S/D/P		
3. Patch Panels / Outlets							S/D/P		
4. Data Switches							S/D/P		
5. UPS							S/D/P		
6. Digital Signal Processors							S/D/P		
7. Amplifiers							S/D/P		
8. Paging Stations							S/D/P		
9. Intercom Station				P			S/D/P		
10. Power Cables	S			P/T					

11. Audio Cables				P			S/D/T		
12. Raceway Systems (Power)				P			S/D/P		
13. Raceway Systems (Audio)				P			S/D/P		
14. Speakers							S/D/P		
15. Breakout Boxes							S/D/P		
16. Terminal Strips, Insert Panels							S/D/P		

Visual	exp	Architect	General Contractor	Electrical Contractor	Low-Voltage Contractor	Owner	AV Designer	Ride Vender	Ride Photo Vendor
1. Wire Management (Cable Tray, Vertical Wire Management)									
2. Equipment Racks									
3. Headend Equipment									
4. Video Monitors									
5. Power Cables	S				P/T				
6. Signal Cables					P		S/D/T		
7. Raceway Systems (Power)	S				P				
8. Raceway Systems (Signal)	S				P				
9. Breakout Boxes							S/D/P		
10. Terminal Strips,Insert Panels							S/D/P		

Appendix E: Tier 1 Building Telecom Spaces

Lodge:



Gelada/Animal Care:

Entry:

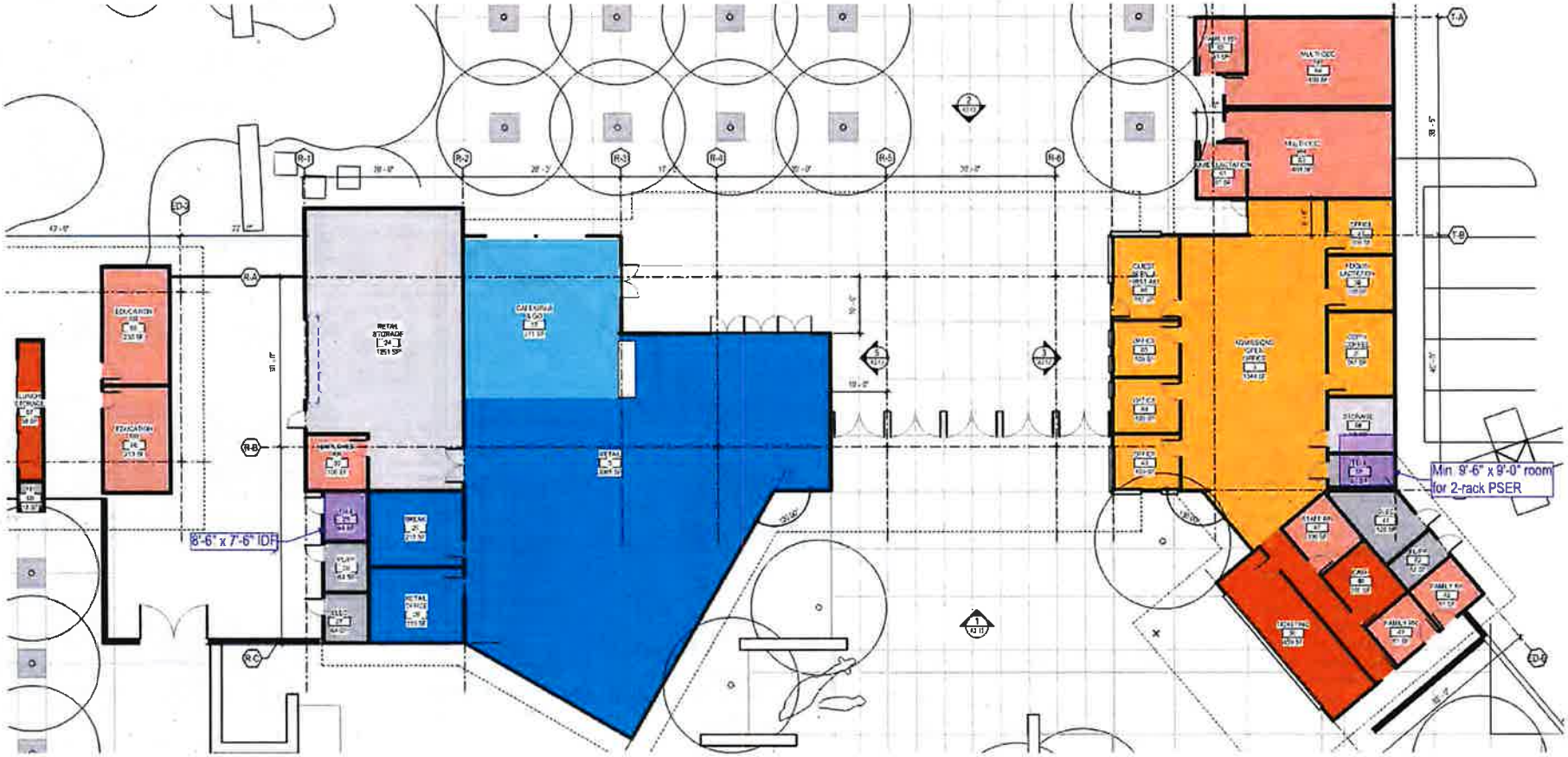


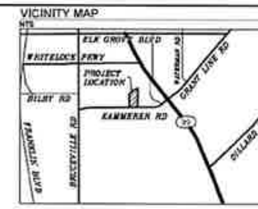
EXHIBIT C8

NEW ZOO AT ELK GROVE

TENTATIVE SUBDIVISION MAP SP0009

VICINITY MAP

NTS



LEGAL DESCRIPTION:

THE LAND REFERRED TO HEREIN BELOW IS SITUATED IN THE CITY OF ELK GROVE, IN THE COUNTY OF SACRAMENTO, STATE OF CALIFORNIA, AND IS DESCRIBED AS FOLLOWS:

PARCEL ONE:

ALL THAT PORTION OF SECTION 13, TOWNSHIP 6 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, BEING A PORTION OF THE LANDS OF PACIFIC TELEPHONE AND TELEGRAPH CO., AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK 3 OF SURVEYS, AT PAGE 158, OFFICIAL RECORDS OF SACRAMENTO COUNTY AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS: COMMENCING AT THE SOUTHWEST CORNER OF THE SAID PACIFIC TELEPHONE AND TELEGRAPH CO. PARCEL BEING THE INTERSECTION OF THE CENTERLINE OF KAMMERER ROAD AND THE WEST LINE OF SAID PACIFIC TELEPHONE AND TELEGRAPH CO. PARCEL; THENCE ALONG THE WEST LINE OF SAID PARCEL NORTH 00°42'36" WEST, 63.59 FEET TO THE TRUE POINT OF BEGINNING; THENCE CONTINUING ALONG SAID WEST LINE, NORTH 00°42'36" WEST, 56.41 FEET TO THE NORTH LINE OF SAID PACIFIC TELEPHONE AND TELEGRAPH CO. PARCEL; THENCE ALONG SAID NORTH LINE NORTH 89°17'24" EAST, 120.00 FEET TO THE EAST LINE OF SAID PACIFIC TELEPHONE AND TELEGRAPH CO. PARCEL; THENCE ALONG SAID EAST LINE SOUTH 00°42'36" EAT, 56.42 FEET; THENCE LEAVING SAID EAST LINE SOUTH 89°17'46" WEST 120.00 FEET TO THE SAID TRUE POINT OF BEGINNING.

132-0320-002 PORTION

PARCEL TWO:

ALL THAT PORTION OF THE SOUTHEAST QUARTER OF THE NORTHWEST QUARTER OF SECTION 13, TOWNSHIP 6 NORTH, RANGE 5 EAST, MOUNT DIABLO MERIDIAN, BEING A PORTION OF THE CITY OF ELK GROVE PARCEL OF LAND DESCRIBED IN THE QUIT CLAIM DEEP RECORDED IN DOCUMENT NO. 201603270313, OFFICIAL RECORDS OF SACRAMENTO COUNTY, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:
COMMENCING AT A POINT IN THE CENTERLINE OF KAMMERER ROAD, A COUNTY ROAD, WHICH POINT IS THE SOUTHWEST CORNER OF THE CERTAIN PARCEL OF LAND CONVEYED TO THE PACIFIC TELEPHONE AND TELEGRAPH COMPANY, A CORPORATION, BY DEED DATED OCTOBER 4, 1941, AND RECORDED OCTOBER 6, 1941, IN BOOK 911, AT PAGE 288, OFFICIAL RECORDS OF SACRAMENTO COUNTY; THENCE ALONG THE WEST LINE OF SAID PACIFIC TELEPHONE AND TELEGRAPH COMPANY PARCEL, BEING THE EAST LINE OF SAID CITY OF ELK GROVE PARCEL, NORTH 00°42'36" WEST, 63.59 FEET TO THE TRUE POINT OF BEGINNING; THENCE LEAVING SAID LINE SOUTH 89°17'46" WEST, 63.42 FEET; THENCE SOUTH 88°09'01" WEST, 145.32 FEET TO THE WEST LINE OF SAID CITY OF ELK GROVE PARCEL; THENCE ALONG SAID WEST LINE NORTH 00°42'36" WEST, 168.00 FEET TO THE NORTH LINE OF SAID CITY OF ELK GROVE PARCEL; THENCE ALONG SAID NORTH LINE NORTH 89°17'24" EAST, 208.71 FEET TO THE EAST LINE OF SAID CITY OF ELK GROVE PARCEL; THENCE ALONG SAID EAST LINE SOUTH 00°42'36" EAST 165.12 FEET TO THE TRUE POINT OF BEGINNING.

132-0320-001 PORTION

PARCEL THREE:

ALL THOSE PORTIONS OF THE SOUTHWEST ONE-QUARTER OF SECTION 12, THE NORTHWEST ONE-QUARTER OF SECTION 13, AND THE NORTHEAST ONE-QUARTER OF SECTION 14 ALL IN TOWNSHIP 6 NORTH, RANGE 5 EAST, MDM AND BEING PORTIONS OF PARCEL C AS SHOWN ON PARCEL MAP FILED FOR RECORD FEBRUARY 6, 1973 IN BOOK 10 OF PARCEL MAPS AT PAGE 27, SACRAMENTO COUNTY RECORDS, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

ALL THAT PORTION OF THE ABOVE-DESCRIBED PARCEL C LYING EASTERLY OF THE FOLLOWING DESCRIBED LINE:

BEGINNING AT A POINT ON THE SOUTH LINE OF SAID PARCEL C BEING ALSO THE SOUTH LINE OF SAID NORTHWEST ONE-QUARTER OF SECTION 13 DISTANT ALONG LAST SAID LINE S 88°41'35"W, 1520.28 FEET FROM A COPPER MONUMENT MARKED L.S. 3636 MARKING THE CENTER OF SAID SECTION 13 AS SHOWN ON SAID PARCEL MAP; THENCE N 0° 15'13"W, 2308.87 FEET TO A POINT IN THE NORTHERLY BOUNDARY OF SAID PARCEL C, AS DESCRIBED BY A CERTIFICATE OF COMPLIANCE-LAND DIVISION, RECORDED AUGUST 23, 1984 IN BOOK 840823, PAGE 864 OF OFFICIAL RECORDS.

EXCEPTING THEREFROM AN UNDIVIDED ½ INTEREST IN ALL MINERALS, OIL, GAS, AND OTHER HYDROCARBON SUBSTANCES AND GEOTHERMAL RIGHTS WITHIN OR UNDERLYING SAID LAND WHETHER NOW KNOWN TO EXIST OR HEREAFTER DISCOVERED, FOR A PERIOD OF 5 YEARS FROM FEBRUARY 8, 1976, AS CONTAINED IN THE DEED FROM JOSEPH J. SOUZA AND MARY SOUZA, HIS WIFE, TO THE GRANTEE HEREIN, AND FOR SO LONG THEREAFTER AS THERE SHALL BE DEVELOPMENT, EXCAVATING, DRILLING, REDRILLING, DEEPENING, REPAIRING AND/OR REWORKING OR PRODUCING OPERATIONS ON SAID LAND BY THE GRANTOR, GRANTEE OR BY ANY LESSEE, AGENT, EMPLOYEE OR JOINT VENTURERS OF THE GRANTOR OR GRANTEE.

EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PARCELS OF LAND CONVEYED TO THE CITY OF ELK GROVE, A MUNICIPAL CORPORATION BY GRANT DEED RECORDED APRIL 20, 2021, AS INSTRUMENT NO. 202104201433, OF OFFICIAL RECORDS.

ALL THAT PORTION OF SECTION 13, TOWNSHIP 6 NORTH, RANGE 5 EAST, MOUNT DIABLO BASE AND MERIDIAN, BEING A PORTION OF THE PARCEL OF LAND DESCRIBED IN GRANT DEED TO JACOBI ELK GROVE RANCH, LLC, RECORDED IN BOOK 20090306, AT PAGE 0847, OFFICIAL RECORDS OF SACRAMENTO COUNTY AND BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

PARCEL 1:

BEGINNING AT THE SOUTHWEST CORNER OF THAT CERTAIN PARCEL OF LAND CONVEYED TO THE CITY OF ELK GROVE BY TAX DEED RECORDED IN BOOK 20171030, AT PAGE 1128 OF OFFICIAL RECORDS OF SACRAMENTO COUNTY, SAID POINT ALSO BEING A POINT OF THE SOUTH LINE OF SAID JACOBI PARCEL OF LAND, SAID POINT ALSO BEING THE CENTERLINE OF KAMMERER ROAD, FROM WHICH THE SOUTHEAST CORNER OF SAID JACOBI PARCEL BEARS NORTH 89°17'24" EAST 828.32 FEET, SAID SOUTHEAST CORNER ALSO BEING THE SOUTHEAST CORNER OF PARCEL "C" AS SHOWN ON THE PARCEL MAP FILED IN BOOK 10 OF PARCEL MAPS, AT PAGE 27, OFFICIAL RECORDS OF SACRAMENTO COUNTY; THENCE ALONG SAID SOUTH LINE AND CENTERLINE SOUTH 89°17'24" WEST 691.96 FEET TO THE WEST LINE OF SAID JACOBI PARCEL; THENCE ALONG THE WEST LINE OF SAID JACOBI PARCEL NORTH 00°39'24" WEST 56.89 FEET; THENCE LEAVING SAID LINE NORTH 89°17'46" EAST 637.19 FEET; THENCE NORTH 88°09'01" EAST 54.72 FEET; THENCE SOUTH 00°42'36" EAST 60.71 FEET TO THE SAID POINT OF BEGINNING.

PARCEL 2:

BEGINNING AT THE SOUTHEAST CORNER OF SAID JACOBI PARCEL SAID SOUTHEAST CORNER ALSO BEING THE SOUTHEAST CORNER OF PARCEL "C" AS SHOWN ON THE PARCEL MAP FILED IN BOOK 10 OF PARCEL MAPS, AT PAGE 27, OFFICIAL RECORDS OF SACRAMENTO COUNTY; THENCE ALONG THE SOUTH LINE OF SAID JACOBI PARCEL OF LAND, SAID SOUTH LINE ALSO BEING THE CENTERLINE OF KAMMERER ROAD, SOUTH 89°17'24" WEST 499.61 FEET; THENCE LEAVING SAID SOUTH LINE NORTH 00°42'36" WEST 63.58 FEET; THENCE NORTH 89°17'46" EAST 45.71 FEET; THENCE NORTH 87°07'46" EAST 165.16 FEET; THENCE NORTH 00°42'14" WEST 19.00 FEET; THENCE NORTH 89°17'46" EAST 28.00 FEET; THENCE SOUTH 00°42'14" EAST 7.00 FEET; THENCE NORTH 89°17'46" EAST 143.97 FEET; THENCE ALONG A CURVE TO THE LEFT HAVING A RADIUS OF 33.00 FEET THROUGH A CENTRAL ANGEL OF 89°57'10" HAVING AN ARC LENGTH OF 51.81 FEET, SUBTENDED BY A CHORD BEARING NORTH 44°19'11" EAST 46.65 FEET; THENCE NORTH 00°39'24" WEST 20.00 FEET; THENCE NORTH 89°20'36" EAST 12.00 FEET; THENCE NORTH 00°39'24" WEST 160.58 FEET; THENCE NORTH 89°20'36" EAST 52.00 FEET TO THE EAST LINE OF SAID JACABI PARCEL, THENCE SOUTH 00°39'24" EAST 296.04 FEET TO THE SAID POINT OF BEGINNING.

PROJECT INFORMATION:

OWNER
CITY OF ELK GROVE
8401 LAGUNA PALMS WAY
ELK GROVE, CA 95758
CONTACT: CHRISTOPHER JORDAN
(916) 478-2222,
CJORDAN@ELKGROVECITY.ORG

CIVIL ENGINEER AND LAND SURVEYOR
KIMLEY-HORN AND ASSOCIATES, INC.
555 CAPITOL MALL, SUITE 300
SACRAMENTO, CA 95814

CONTACT: SHEETAL BHATT, PE
(916) 859-3609,
SHEETAL.BHATT@KIMLEY-HORN.COM

CONTACT: ALEX CALDER, PLS
(916) 330-3003,
ALEX.CALDER@KIMLEY-HORN.COM

ASSESSOR'S PARCEL NUMBERS
132-0320-002, 132-0320-001, 132-0320-010

EXISTING USE AND ZONE
AGRICULTURAL

EXISTING USE AND ZONE
ZOOLOGICAL PARK

ACREAGE
98.89± ACRES (GROSS)

DISTRICTS:

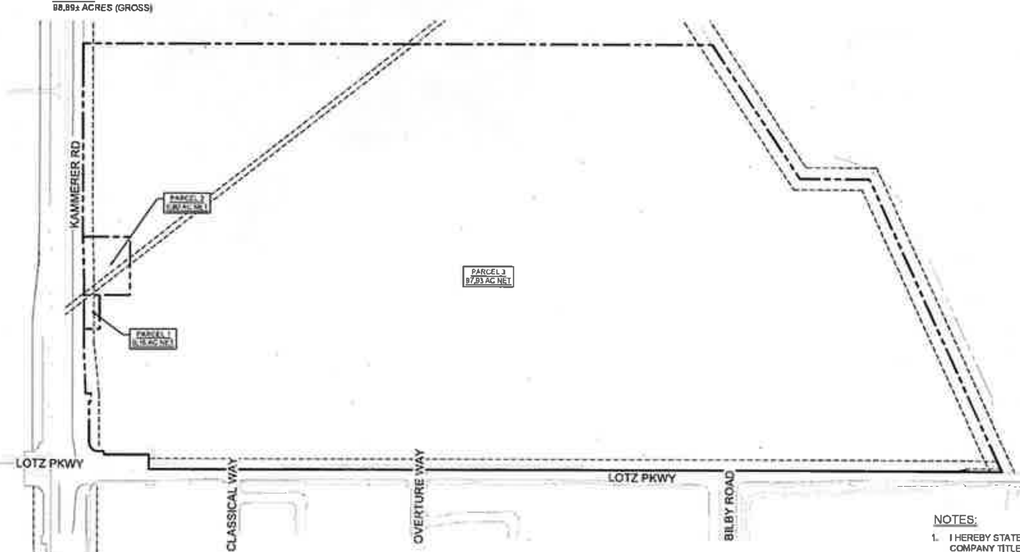
WATER:	SACRAMENTO COUNTY WATER AGENCY ZONE 41 827 7TH STREET SACRAMENTO, CA 95814 (916) 874-6851
SEWER:	SACRAMENTO AREA SEWER DISTRICT 10060 GOETHE ROAD SACRAMENTO, CA 95827 (916) 876-6000
ELECTRICITY:	SMUD 6301 S ST SACRAMENTO, CA 95817 ERICA VALDEZ ERICA.VALDEZ@SMUD.ORG
GAS:	PG&E 1415 L ST SUITE 280 SACRAMENTO, CA 95814 (877) 743-7782
FIRE:	COSUMNES CSD 8820 ELK GROVE BLVD. ELK GROVE, CA 92624 (916) 405-7113
PARKS:	ELK GROVE CSD 8820 ELK GROVE BLVD. ELK GROVE, CA 95758 PARKS & RECREATION DEPT. (916) 405-5600

GENERAL NOTES:

1. PARCEL NUMBERS ARE FOR IDENTIFICATION ONLY AND ARE NOT INTENDED AS FINAL.
2. THE EXISTING TOPOGRAPHY, AS SHOWN, IS BASED ON SURVEY DATED JANUARY 25, 2022 BY UNICO, VERTICAL DATUM: NAVD88, BASED ON OBSERVATIONS TO NGS PID JS3698 "F1414" (48.34). THE SPOT ELEVATION ELEVATIONS, AS DETERMINED AT TIME OF SAID SURVEY.
3. THE BASIS OF BEARING FOR THIS LEGAL DESCRIPTION IS THE CENTER LINE OF KAMMERER ROAD AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK 91 OF SURVEYS AT PAGE 18, OF OFFICIAL RECORDS OF SACRAMENTO COUNTY.

LEGEND AND ABBREVIATIONS:

— - —	ORIGINAL PROPERTY LINE
— - —	PROPERTY / RIGHT-OF-WAY LINE
- - - -	EASEMENT
AC	ACRE
BL	BIKE LANE
CG/C&G	CURB AND GUTTER
COEG	CITY OF ELK GROVE
ESMT	EASEMENT
NTS	NOT TO SCALE
PKWY	PARKWAY
PROP	PROPOSED
PUE	PUBLIC UTILITY EASEMENT
R/W	RIGHT-OF-WAY
SHLDR	SHOULDER
SF	SQUARE FEET
SW	SIDEWALK



LOCATION MAP
SCALE: NTS

RESULTANT PARCEL SIZES (NET):

PARCEL	NET AREA (SF)	NET AREA (AC)
1	2,597,916±	59.64±
2	332,383±	7.63±
3	614,196±	14.10±
4	153,331±	3.52±
5	121,097±	2.78±
6	6,088±	0.14±
7	871±	0.32±
ROW	481,774±	11.06±
TOTAL	4,307,648±	98.89±

EXISTING PARCEL SIZES:

EXISTING PARCEL	APN	NET AREA (SF)	NET AREA (AC)
1	132-0320-002	6,969±	0.16±
2	132-0320-001	34,848±	0.80±
3	132-0320-010	4,265,621±	97.93±
TOTAL	-	4,307,649±	98.89±

NOTES:

1. I HEREBY STATE THAT ALL THE EASEMENTS AS INDICATED IN FIDELITY TITLE COMPANY TITLE REPORT, NO. 01005782-10-PA-PJ DATED AS OF NOVEMBER 24TH, 2021 HAVE BEEN SHOWN HEREON AND/OR HAVE BEEN ACCOUNTED FOR IN NOTE(S) PLACED HEREON. ALL EASEMENTS PROPOSED TO BE ABANDONED OR QUITCLAIMED AND/OR ALL EASEMENTS THAT CANNOT BE LOCATED ARE NOTED HEREON.

L.S. *Alex Calder*

DATE: MARCH 8, 2024

2. ZONE X FLOOD ZONE (AREAS OUTSIDE 0.2% ANNUAL CHANCE FLOODPLAIN) COMMUNITY PANEL NO. 06067C0318H AND 06067C0450H DATED AUGUST 16 2012.
3. THREE (3) TREES ARE LOCATED ON SITE.
4. THREE (3) TREES ARE PROPOSED FOR REMOVAL.
5. THREE (3) STRUCTURES ARE LOCATED ON SITE.
6. THREE (3) STRUCTURES ARE PROPOSED FOR REMOVAL.
7. TWO (2) WELLS ARE LOCATED ON SITE.
8. TWO (2) WELLS ARE PROPOSED FOR REMOVAL.
9. SURVEY INFORMATION PROVIDED BY UNICO SURVEYING DATED JANUARY 25TH 2022.

Kimley»Horn

8675 KAMMERER ROAD
ELK GROVE, CA 95757
NEW ZOO AT ELK GROVE

TITLESHEET

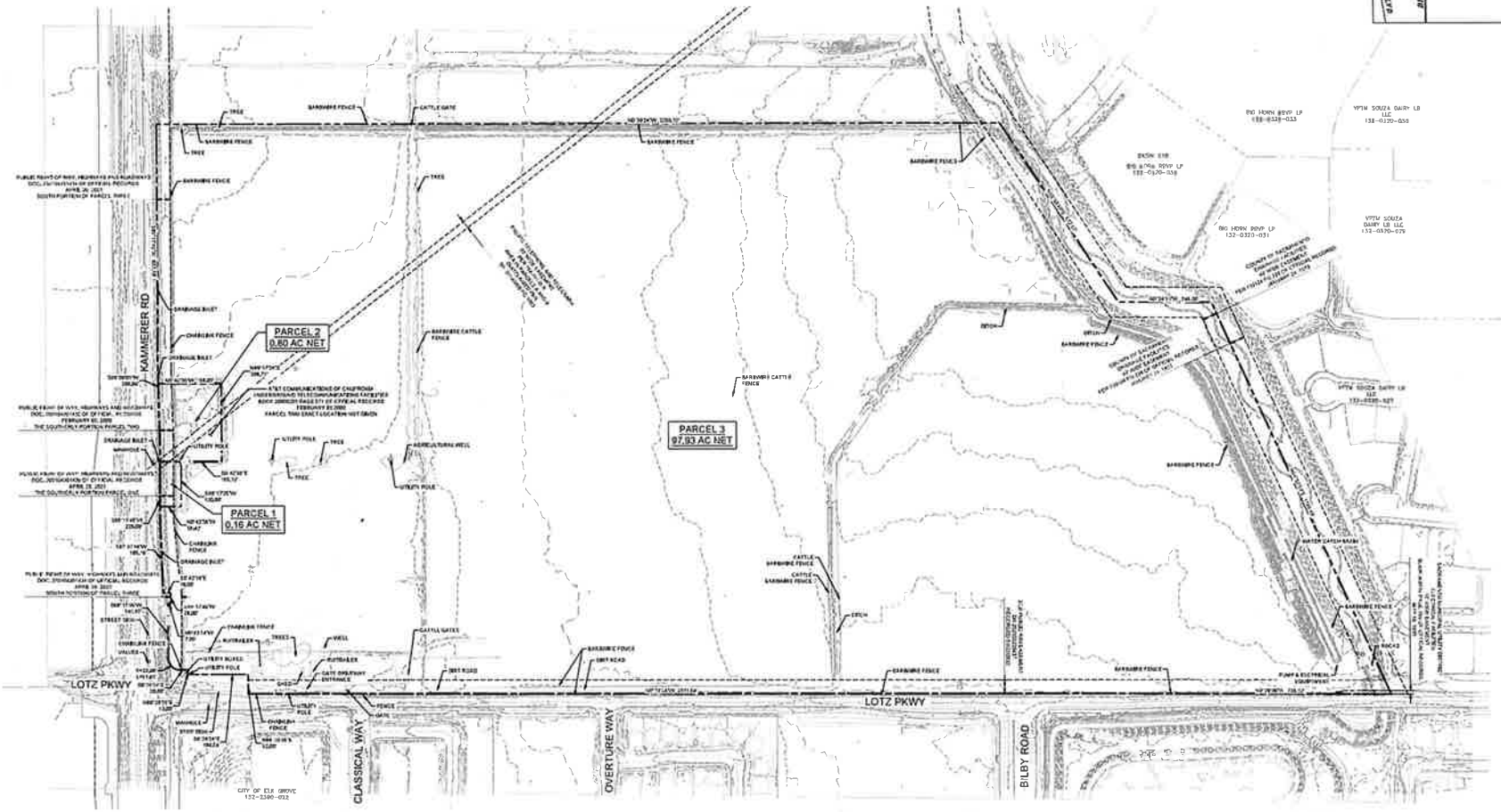
SCALE: AS SHOWN

TM-1

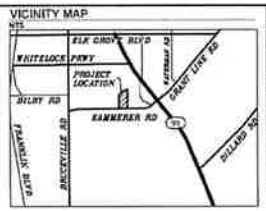
1 OF 3

NEW ZOO AT ELK GROVE

TENTATIVE SUBDIVISION MAP SP0009



VICINITY MAP



PARCEL SUMMARY:

EXISTING PARCEL	APN	NET AREA (SF)	NET AREA (AC)
1	132-3390-012	6,969±	0.16±
2	132-0320-001	34,848±	0.80±
3	132-0320-010	4,263,831±	97.93±
TOTAL	-	4,307,648±	98.89±

LEGEND

- PROPERTY / RIGHT-OF-WAY LINE
- EASEMENT
- VALVE
- UTILITY POLE
- MANHOLE
- IRON
- AC ACRE

BASIS OF BEARING

THE BASIS OF BEARING FOR THIS LEGAL DESCRIPTION IS THE CENTER LINE OF KAMMERER ROAD AS SHOWN ON THE RECORD OF SURVEY FILED IN BOOK 91 OF SURVEYS AT PAGE 18, OF OFFICIAL RECORDS OF SACRAMENTO COUNTY.

VERTICAL DATUM

NAVD 88 BASED ON OBSERVATIONS ON NGS PID JS3898 "F1414" (48.34')

GRAPHIC SCALE IN FEET
0 50 100 200

Kimley»Horn

8675 KAMMERER ROAD
ELK GROVE, CA 95757

NEW ZOO AT ELK GROVE

EXISTING CONDITIONS

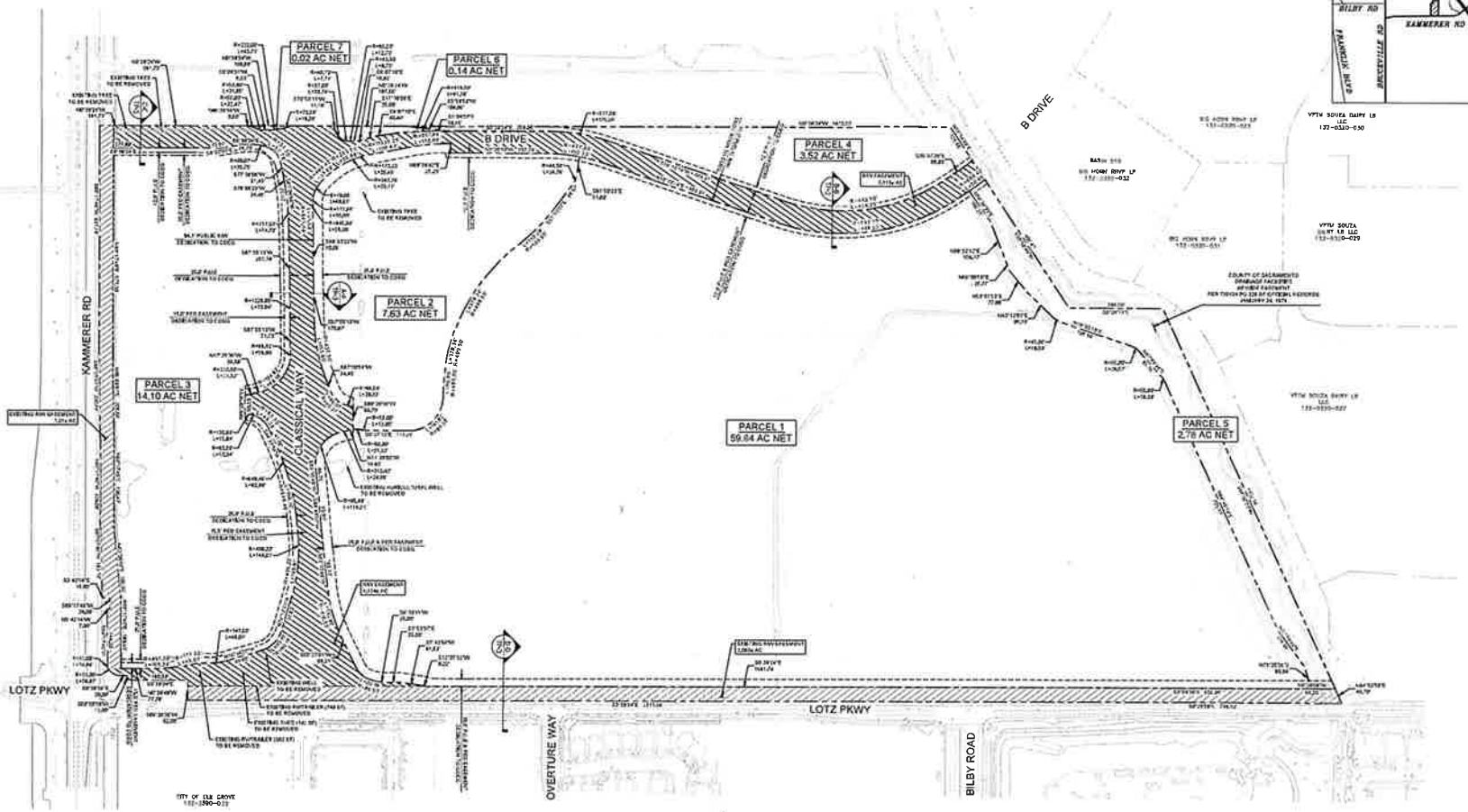
SCALE: AS SHOWN

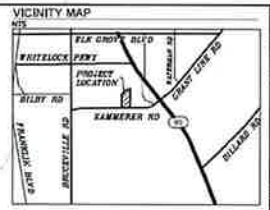
SHEET: TM-2

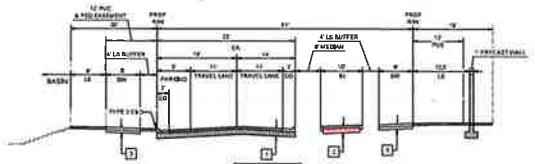
SHEET NUMBER: 2 OF 3

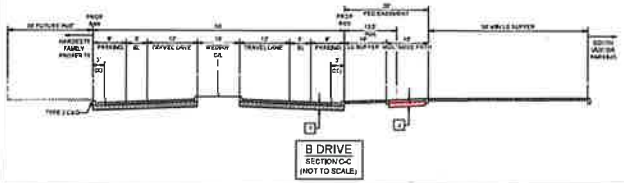
NEW ZOO AT ELK GROVE

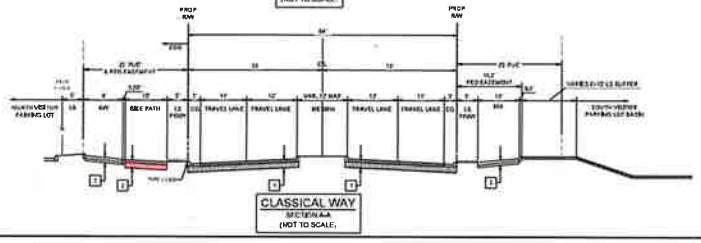
TENTATIVE SUBDIVISION MAP SP0009











RESULTANT PARCEL SIZES (NET):

PARCEL	NET AREA (SF)	NET AREA (AC)
1	2 597 816±	59.64±
2	332 362±	7.63±
3	614 196±	14.10±
4	153 331±	3.52±
5	121 097±	2.78±
6	6 398±	0.15±
7	671±	0.02±
ROW	481 774±	11.06±
TOTAL:	4 257 645±	98.00±

LEGEND & ABBREVIATIONS

	ORIGINAL PROPERTY LINE	C/G/C&G	CURB AND GUTTER
	PARCEL LINE	CL	CENTERLINE
	EASEMENT	COEG	CITY OF ELK GROVE
	PROPOSED RIGHT-OF-WAY EASEMENT	ESMT	EASEMENT
	EXISTING RIGHT-OF-WAY EASEMENT	NTS	NOT TO SCALE
		PKWY	PARKWAY
AC	ACRE	PROP	PROPOSED
BL	BIKE LANE	PUE	PUBLIC UTILITY EASEMENT
		R/W	RIGHTS-OF-WAY
		SHLDR	SHOULDER
		SF	SQUARE FEET
		SW	SIDEWALK

NOTES

1. PARCEL NUMBERS ARE FOR IDENTIFICATION ONLY AND ARE NOT INTENDED AS FINAL.
2. PARCEL DIMENSIONS AND LOT AREAS ARE PRELIMINARY AND SUBJECT TO ADJUSTMENT DURING FINAL DESIGN.
3. NO DEVIATION TO CITY STANDARDS IS PROPOSED WITH THIS MAP.

GRAPHIC SCALE IN FEET
0 50 100 200

Kimley»Horn

8675 KAMMERER ROAD
ELK GROVE, CA 95757

NEW ZOO AT ELK GROVE

TENTATIVE SUBDIVISION MAP

SCALE: AS SHOWN

DRAWING: TM-3

SHEET NUMBER: 3 OF 3

Exhibit D
Conditions of Approval

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
On-Going				
1.	Development and operation of the proposed Project shall be consistent with the Project Description and Project Plans as provided in Exhibits G and H, incorporated herein by this reference. Deviations from the approved plans shall be reviewed by the City for substantial compliance and may require amendment by the appropriate hearing body.	On Going	Planning	
2.	This action does not relieve the Applicant of the obligation to comply with all ordinances, statutes, regulations, and procedures.	On Going	Planning	
3.	The Applicant, or Successors in Interest (hereby referred to as the Applicant), shall hold harmless the City, its Council Members, its Planning Commission, officers, agents, employees, and representatives from liability for any award, damages, costs and fees incurred by the City and/or awarded to any plaintiff in an action challenging the validity of this permit or any environmental or other documentation related to approval of this permit. Applicant further agrees to provide a defense for the City in any such action.	On Going	Planning	
4.	Except as otherwise specified or provided for in the Project plans or in these conditions, the Project shall conform to the development standards and design requirements adopted by the City of Elk Grove, specifically including but not limited to the following: • Zoological Park Special Planning Area • The Elk Grove Zoning Code (Title 23 of the EGMC) • EGMC Chapter 19.12 (Tree Preservation and Protection) • EGMC Chapter 14.10 (Water Efficient Landscape Requirements)	On Going	Planning Engineering	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
5.	The Applicant shall design and construct all improvements in accordance with the City of Elk Grove Improvement Standards, as further conditioned herein, and to the satisfaction of the City Engineer. All street improvements shall include vertical curb and gutter, except as approved by the City, in which case street improvements shall include rolled curb and gutter. Specific locations on median(s) that require emergency vehicle access will be evaluated during review and acceptance of the Improvement Plans. Public sewer, water, and other utility infrastructure shall be designed and constructed in accordance with the standards of the appropriate utility.	On Going	Engineering SCWA SacSewer SMUD PG&E	
6.	The Applicant shall pay all applicable plan check fees, impact fees, or other costs as required by the City, the Cosumnes Community Services District (CCSD), SacSewer, Sacramento County Water Agency (SCWA), or other agencies or services providers as established by law.	On-Going	Planning Engineering CCSD SCWA SacSewer	
7.	Approval of this project does not relieve the Applicant from the applicable requirements of subsequent permits and approvals, including but not limited to the following as may be applicable: • Grading Permit and Improvement Plan • Building Permit and Certificate of Occupancy • Requirements of the Sacramento Metropolitan Air Quality Management District • Fire Department review for permits and/or occupancy • US Department of Agriculture permitting for the housing of warm-bodied animals	On-Going	Planning Engineering Building CCSD SCWA SacSewer	
8.	To the extent that modifications are necessary to the site plan, building plans, landscape plans, or other aspects of the Project Approvals as part of the issuance of grading permit(s), improvement plans, building permits, or other construction permits, such changes shall be deemed to be in substantial conformance with the Project Approvals, and no amendment to the approvals shall be necessary, so long as the overall intent and character of the site plan is maintained, or there is no more than a ten percent change in the building square footage of any building. The Development Services Director shall have the authority to determine substantial conformance at their sole discretion.	On-Going	Planning	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
9.	Construction plans, including improvement plans and building permits, may be prepared, submitted, and improved both in terms of the Phasing Plan provided in the Project plans but also within each Phase on a geographic basis. Such phasing shall be coordinated with and approved by the Development Services Director.	On-Going	Planning	
10.	Signage is not approved with this Application. Future signs shall be reviewed under a separate Sign Permit application. No Sign Permits shall be issued until a Sign Program has been approved pursuant to the Zoological Park Special Planning Area.	On-Going	Planning	
11.	Except for emergency notifications, no amplified sound, which is audible beyond the boundaries of the Project, shall occur after 10:00 pm or before 8:00 am.	On-Going	Development Services	
12.	The Applicant shall coordinate with the Police Department and the Cosumnes Community Services District Fire Department and conduct regular emergency drill trainings.	On-Going	Police	
13.	Review and implement, as applicable, the Mosquito Reducing Best Management Practices.	On-Going	Vector Control	
14.	As part of the Project's Building Permits, and pursuant to the Building Code/Fire Code, the Applicant may request the use of alternate means and methods (AMMR). Such requests shall be submitted for approval through the Cosumnes Fire Department. Any deviation from the approved alternate means and methods approvals may affect the Project as proposed.	On-Going	CCSD Fire	
15.	The installation of on-site traffic calming devices such as but not limited to speed bumps, humps, speed tables, or other designs are prohibited unless approved by the fire code official.	On-Going	CCSD Fire	
16.	Designated fire lanes shall be marked and maintained as fire lanes to the reasonable satisfaction of the Cosumnes Fire Department.	On-Going	CCSD Fire	
17.	Trees overhanging fire lanes shall always be maintained at minimum 13 feet 6 inches of vertical clearance.	On-Going	CCSD Fire	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
18.	All fire and life safety systems shall be maintained in accordance with California Code of Regulations Title 19. Inspection, testing, and maintenance reports shall be submitted to the Cosumnes Fire Department online reporting system. https://www.cosumnescsd.gov/1291/Maintaining-Commercial-Fire-Systems	On-Going	CCSD Fire	
19.	Operational permits as set forth in California Fire Code Chapter 1 may apply to this Project. If applicable, the Applicant is responsible for paying reasonable and established operational permit fees as invoiced by the Cosumnes Fire Department, as needed.	On-Going	CCSD Fire	
20.	Gates obstructing fire access routes shall comply with the Cosumnes Fire Department Emergency Access Gates and Barriers standard. Gate plans shall be submitted to the Cosumnes Fire Department for review and permit approval prior to installation of gate. https://www.yourcsd.com/DocumentCenter/View/23164/Emergency-Access-Gates-and-Barriers-PDF	On-Going	CCSD Fire	
21.	The Applicant shall have a dedicated person(s), with published contact information, to serve as a single point of contact to address neighbor concerns, including sound/noise, traffic, light, and other operational conditions. A person shall be reachable 24 hours a day seven days a week to address concerns.	On-Going	Planning	
Prior To or In Conjunction With Improvement and/or Grading Plan Submittal or Approval				
22.	The development approved by this action is subject to the Mitigation Monitoring and Reporting Program (MMRP) adopted for the New Zoo at Elk Grove Project. The Applicant shall pay all costs associated with monitoring mitigation measures applicable to this development in order to assure MMRP compliance. The MMRP shall be recorded on the Property.	Prior to issuance of any plans or permits associated with this Project, the Applicant shall submit the deposit to the City of Elk Grove.	Planning Engineering	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
23.	The Planning Division shall be notified immediately if any prehistoric, archaeologic, or paleontologic artifact is uncovered during construction. All construction must stop and an archaeologist that meets the Secretary of the Interior's Professional Qualifications Standards in prehistoric or historical archaeology shall be retained to evaluate the finds and recommend appropriate action. A note stating the above shall be placed on the Improvement Plans.	Improvement Plan	Planning	
24.	All construction must stop if any human remains are uncovered, and the County Coroner must be notified according to Section 7050.5 of California's Health and Safety Code. If the remains are determined to be Native American, the procedures outlined in CEQA Section 15064.5 (d) and (e) shall be followed. A note stating the above shall be placed on the Improvement Plans	Improvement Plans	Planning	
25.	The Applicant shall coordinate with SacRT for one or more bus stop locations. The Applicant shall design and construct one or more bus stops as part of the Project.	Improvement Plans	SacRT Planning	
26.	All water lines shall be located within a public right-of-way or within easements dedicated to SCWA. Easements shall be reviewed and approved by Sacramento County Water Agency prior to Improvement Plan approval or Final Map approval.	Improvement Plans	SCWA	
27.	No water supply mains shall be located under structures such as box culverts and bridges. If the Project will build box culverts and bridges to the ultimate width, water mains shall cross above ground attached to the side of the structure. Structures shall be designed accordingly. If the ultimate width is not being built, water mains shall cross underground routed outside of and around the ultimate structure footprint. 15-foot-wide water main easements shall be dedicated for the portion outside of ROW. The crossing shall be approved by SCWA Engineer. Underground crossings and attachments to structures shall be included in the environmental impact analysis. Additional environmental permitting and other associated costs will be at Applicant's expense.	Improvement Plans	SCWA	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
28.	Destroy all abandoned wells on the proposed Project site in accordance with the requirements of the Sacramento County Environmental Health Division. Clearly show all abandoned/destroyed wells on the improvement plans for the Project. Prior to abandoning any existing agricultural wells, applicant shall use water from agricultural wells for grading and construction	Improvement Plans	SCWA	
29.	Provide a non-potable water distribution system to the satisfaction of the Sacramento County Water Agency. When available, the applicant shall use non-potable water during grading and construction.	Improvement Plans	SCWA	
30.	The Project shall connect to the existing Sacramento County Water Agency system at a minimum of two locations. Applicant shall coordinate with the Agency and adjacent projects to accomplish this.	Improvement Plans	SCWA	
31.	SCWA will not issue water connection permits or sign improvement plans until existing water supply masterplans have been updated as necessary to accommodate zoo demands and approved by the SCWA.	Improvement Plans	SCWA	
32.	Designate parking and charging facilities for electric buses. The location and count shall be to the satisfaction of the Development Services Director in consultation with the Sacramento Metropolitan Air Quality Management District and local school district(s).	Improvement Plans	Planning Air District	
33.	The Applicant shall prepare and submit a drainage study to the satisfaction of the City Engineer and in accordance with City of Elk Grove's Storm Drainage Master Plan, Improvement Standards, General Plan, SEPA Drainage Master Plan, and any specific plan and/or master plan. The study shall also include an evaluation of interim drainage improvements, which may include widening of the Shed C Channel. The Applicant shall design and install all storm drain improvements in accordance with the approved drainage study for the Project, as condition herein, to the satisfaction of the City.	Improvement Plans	Engineering	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
34.	The Applicant shall prepare and submit a Post-Construction Stormwater Quality Control Plan in accordance with the City of Elk Grove Improvement Standards and most recent version of the Stormwater Quality Design Manual for the Sacramento Region. The Applicant shall also submit a separate maintenance manual describing proper maintenance practices for the specific treatment controls to be constructed.	Improvement Plans	Engineering	
35.	A maintenance agreement with the Zoological Society or any other entity that has control of the Property shall be executed for the stormwater quality control treatment devices to the satisfaction of the City.	Improvement Plans	Engineering	
36.	The Applicant shall provide procedures to accommodate hydromodification requirements. Low Impact Development (LID) features adopted in the Sacramento Region Stormwater Quality Manual (Manual) shall be implemented for the Project. All the designs shall be consistent with the design examples prescribed in the latest edition of the Manual.	Improvement Plans	Engineering	
37.	The Applicant shall design and improve all public streets (including Lotz Parkway, Classical Way, and Road B), intersections (Lotz/Kammerer, Lotz/Classical, Classical/Road B), and adjoining or accompanying sidewalks, landscape corridors, and bicycle and trail facilities, as illustrated on the Project Plans, and in accordance with Zoological Park Special Planning Area, Bicycle, Pedestrian, and Trails Master Plan, and the City Improvement Standards, to the satisfaction of the City. Only those deviations illustrated on the Project Plans or as provided in the Zoological Park Special Planning Area shall be permitted, unless a Design Deviation is approved by the City Engineer pursuant to the City Improvement Standards.	Improvement Plans	Engineering	
38.	The City may allow for the phased implementation of the public street system based upon the phasing of the Project and the status of adjoining development to the north and west of the Project site. Interim improvements, with appropriate reservation(s) may be permitted in the sole discretion of the City Engineer.	Improvement Plans	Engineering	
39.	The Applicant shall design and construct a northbound left turn pocket on Lotz Parkway at the northerly most driveway on Lotz Parkway.	Improvement Plans	Engineering	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
40.	The Applicant shall dedicate, design, and construct a "purple pipe" network for the transmission and distribution of Title 22 tertiary treated water to serve the Project site, greenways (trails), landscape corridors, and other irrigation throughout the Project. The "purple pipe" shall be designed and constructed pursuant to the standards of SCWA.	Improvement Plans	Engineering	
41.	The Applicant shall obtain clearance letters from applicable entities for any sign located within a utility easement, including a Public Utility Easement.	Improvement Plans	Engineering	
42.	The Applicant shall prepare and submit Landscape Plans in accordance with the provisions of the Zoological Park Special Planning Area and to the satisfaction of the City.	Improvement Plans	Planning	
43.	The Applicant shall prepare and submit Lighting Plans in accordance with the provisions of the Zoological Park Special Planning Area and to the satisfaction of the City.	Improvement Plans	Planning	
44.	The Applicant shall pay the Southeast Policy Area (SEPA) Drainage Impact Fee, as determined by the City, pursuant to EGMC Chapter 16.95, Development Impact Fees. Fees shall be paid prior to the acceptance of Improvement Plans. The SEPA drainage fee is based on total gross acreage. The Project may receive fee credit, up to a maximum of 100% of the fee obligation, towards the basin fee for public improvements completed by the Project.	Improvement Plans	Engineering	
45.	Project shall submit on-site, off-site, street, and capital improvement plans to the Cosumnes Fire Department for review and approval prior to beginning construction, which approval shall not be unreasonably withheld.	Improvement Plans	CCSD Fire	
46.	Each phase of this Project shall be coordinated in such a way that all required fire hydrants for that phase are live, with two points of service, and there will be no less than two fire department access points always, to the reasonable satisfaction of Cosumnes Fire Department.	Improvement Plans	CCSD Fire	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
47.	The Project shall provide fire flow from a public water system that meet the fire flow requirements of the California Fire Code and the Cosumnes Fire Department. This Project requires a minimum 10-inch looped fire main to supply on-site fire hydrants and fire sprinkler systems. This on-site fire main shall be connected to the municipal water supply at two approved, remotely located points of connection to achieve two flow directions and shall be publicly maintained by the water purveyor. Additional water lines may be required due to the unique nature of this Project. Water supply and fire hydrants will be provided to accommodate safety standards to the reasonable satisfaction of the Cosumnes Fire Department.	Improvement Plans	CCSD Fire	
48.	For the surrounding roadways such as Lotz Parkway, Classical Way, Kammerer Road, and B Drive, for which street hydrants are not needed for protection of structures, fire hydrants shall be provided at each intersection and at not less than 1000-foot intervals for transportation hazards. Except along streets of four or more lanes, fire hydrants shall be installed with an average spacing of 300 feet on each side of the street and arranged on an alternating basis.	Improvement Plans	CCSD Fire	
49.	Fire hydrants shall be provided in designated parking areas, along streets, within the park, and the like to the reasonable satisfaction of the Cosumnes Fire Department.	Improvement Plans	CCSD Fire	
50.	Fire department connections shall be placed within 40 feet of a fire hydrant, or as otherwise to the reasonable satisfaction of the Cosumnes Fire Department.	Improvement Plans	CCSD Fire	
51.	Standpipes shall be placed within 40 feet of a fire hydrant or as otherwise to the reasonable satisfaction of the Cosumnes Fire Department.	Improvement Plans	CCSD Fire	
52.	This Project may require an on-site fire pump house and or dedicated fire pump room to support fire sprinkler systems, alternate fire suppression systems, and/or fire operations. The Applicant shall consult with a fire protection engineer and the water purveyor to determine if any unique circumstances exist that may require a fire pump, which may be considered as an AMMR.	Improvement Plans	CCSD Fire	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
53.	Given the nature of the Project, additional and approved fire department access points, equipped with rapid entry devices, may be required to the reasonable satisfaction of the Cosumnes Fire Department.	Improvement Plans	CCSD Fire	
54.	The Project shall provide approved, dedicated fire department parking areas, at the front and other areas, for purposes of routine emergency medical aid and other fire department related emergency response, all to the reasonable satisfaction of the Cosumnes Fire Department.	Improvement Plans	CCSD Fire	
55.	The Applicant shall consult with the Cosumnes Fire Department to identify the necessary fire lanes and provide for their marking and installation. The final configuration of fire lanes shall be to the reasonable satisfaction of the Cosumnes Fire Department.	Improvement Plans	CCSD Fire	
56.	Fire apparatus access roads for aerial fire apparatus shall be provided for all buildings exceeding 30 feet in height. Aerial apparatus access roads shall be provided on at least 2 intersecting building sides. Overhead utility and power lines shall not be located over aerial apparatus access roads or between the access road and the building. Shade trees shall not interfere with aerial operations. Underground vaults or utility boxes shall not be located within designated aerial operations areas to avoid conflict with outriggers. The unobstructed width of aerial apparatus roads shall not be less than 26 feet. Aerial apparatus access roads shall be located in relation to buildings as follows: a. Buildings 30 to 40-ft in height, located a minimum of 14-feet from building b. Buildings 41 to 50-ft in height, located a minimum of 20-feet from building c. Buildings 51 to 60-ft in height, located a minimum of 27-feet from building d. Buildings 61-ft in height and greater, located a minimum of 33-feet from building This is a standard fire code requirement for fire access. Understanding the unique nature of this project the intent of this condition is to ensure project and fire department collaboration for each unique circumstance and the alternative means and methods that go along with it.	Improvement Plans	CCSD Fire	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
57.	Fire department access routes shall maintain minimum fire access width requirements. Routes shall provide a minimum 13-foot 6-inch vertical clearance and turning radii of 25-feet inside and 50 feet-outside (25 feet wide at and through the turn). Routes shall be paved and capable of supporting at least 80,000 pounds gross vehicle weight in all weather conditions. The slope for access roadways shall not exceed 10% for asphalt and 5% for concrete. The angle of approach and angle of departure shall not exceed eight degrees. The use of turf-block, grass-crete or similar alternate road surfaces is not approved for installation for fire apparatus access routes.	Improvement Plans	CCSD Fire	
58.	Fencing along all developed areas adjacent to wetlands, riparian corridors, creeks, railways, areas that may develop dry vegetation, or similar open spaces shall be non-combustible.	Improvement Plans	CCSD Fire	
59.	Provide at least ten (10) feet of greenbelt or other defensible space between combustible fences and wetlands, riparian corridors, creeks, railways, and other areas that may develop dry vegetation, or similar open spaces.	Improvement Plans	CCSD Fire	
60.	Fire department access to wetlands, riparian corridors, creeks, railways, areas that may develop dry vegetation, or similar open spaces shall be provided in accordance with the following: a. Provide fire department access to at the end of cul-de-sacs or other approved location via rolled curbs. b. Gates limiting access shall be equipped with an approved method for rapid access such as a Knox padlock or breakaway padlock. c. A turning radius of not less than 35 feet inside and 45 feet outside is required. d. Trails/bike lanes adjacent to spaces needed for fire access shall be paved a minimum of 10 feet wide with 2 feet of all-weather material on each side. e. Fire access routes, bike paths, and bridges shall be capable of supporting 35,000 pounds gross vehicle weight. Bridges shall meet the design requirements of the California Fire Code.	Improvement Plans	CCSD Fire	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
Prior to or In Conjunction with Final Map Submittal or Approval				
61.	The Final Parcel Map shall substantially conform to the Tentative Subdivision Map presented and incorporated as part of the Project approvals, relative to the number of lots and their general configuration. The City will allow for reconciliation of the boundaries of the proposed lots vis-à-vis the proposed right-of-way set aside relative to the ultimate location and configuration of driveways, utilities, and other public and private infrastructure as determined in the discretion of the City.	Final Map	Engineering	
62.	The Applicant shall request AT&T quitclaim the existing easements on the property found in Book 764 Page 181 and Book 20000203 Page 571 of Official Records on file with Sacramento County.	Final Map or Phase 1 Improvement Plan	Engineering	
63.	The Applicant shall dedicate public utility easements for underground facilities and appurtenances adjacent to public streets.	Final Map	Engineering	
64.	The Applicant shall dedicate a pedestrian easement for any sidewalks adjacent to but located outside of the public right-of-way, as shown on the Tentative Subdivision Map.	Final Map	Engineering	
65.	The Applicant shall provide reciprocal access and parking between conjoining parcels of this development (Lots 1, 2, and 3 of the Tentative Subdivision Map), including but not limited to common area ownership and maintenance to the satisfaction of the City.	Final Map	Engineering	
66.	As determined by SacSewer, sewer easements may be required. All sewer easements shall be dedicated to SacSewer, in a form approved by the District Engineer. All SacSewer sewer easements shall be at least 20 feet in width and ensure continuous access for installation and maintenance. SacSewer will provide maintenance only in public right-of-ways and in easements dedicated to SacSewer.	Final Map	SacSewer	
Prior to or In Conjunction with Building Permit Submittal or Issuance/Approval				
67.	Provide separate public water service to each building.	Building Permit	SCWA	
68.	Prior to the issuance of building permits water intensive commercial and industrial building permit applicants shall conduct a water use efficiency review and submit the findings in required environmental documentation for the Project.	Building Permit	SCWA	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
69.	Prior to the issuance of building permits require efficient cooling systems, re-circulating pumps for fountains and ponds as a condition of service.	Building Permit	SCWA	
70.	Designate areas and charging facilities at anticipated delivery locations for EV charging and shore power for transport refrigeration units.	Building Permit	Planning AQMD	
71.	The Applicant shall reconstruct any damaged curb, gutter, sidewalk and/or pavement caused by construction-related activity associated with the Project. If pavement replacement is necessary, as determined by the City, the Applicant may be required to grind, overlay, and/or slurry seal the damaged portion(s) in accordance with the City Improvement Standards and to the satisfaction of the City. The Applicant shall schedule an inspection with the City to document the pre-construction condition of existing surface infrastructure adjacent to and near the Project.	Building Permit	Engineering	
72.	The Applicant shall reconstruct any existing ADA compliance improvements adjacent to the Project to meet current standards.	Building Permit	Engineering	
73.	Connection to the District's sewer system shall be required to the satisfaction of SacSewer. In order to obtain sewer service, construction of SacSewer sewer infrastructure will be required. District Design Standards apply to sewer construction.	Building Permit	SacSewer	
74.	Prior to issuance of Building Permits for qualifying structures, Applicant shall submit for Level 2 Design Review as provided in the Zoological Park Special Planning Area.	Building Permit	Planning	
75.	To the reasonable satisfaction of the Cosumnes Fire Department, roadways, street signs, and fire lanes shall be installed and meet minimum fire access requirements (on-site and off-site) prior to construction or on-site storage of combustible materials.	Building Permit	CCSD Fire	
76.	Water mains and fire hydrants designated for the Project shall be installed, tested, flushed, inspected, and able to provide the required fire flow prior to combustible construction and or to the reasonable satisfaction of the Cosumnes Fire Department.	Building Permit	CCSD Fire	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
77.	This Project is required to provide a fire control room for each fire sprinklered building and/or to the reasonable satisfaction of the Cosumnes Fire Department. https://www.cosumnescsd.gov/DocumentCenter/View/21754/Fire-Control-Room-Design-Standard-PDF	Building Permit	CCSD Fire	
78.	The Project shall provide a centralized emergency management room, designed in coordination with the Cosumnes Fire Department, in which to conduct emergency operations.	Building Permit	CCSD Fire Police	
79.	The Project shall provide onsite fire access to within 150 feet of all portions of each building as measured by an approved route around the exterior of each building. An alternative distance may be approved by the Cosumnes Fire Department. Understanding the unique nature of this Project, the intent of this condition is to ensure Project and fire department collaboration for each unique circumstance and the alternative means and methods that go along with it. Additional fire lanes will be required.	Building Permit	CCSD Fire	
80.	Project shall submit for review any building/structure naming, addressing, numbering, or other building/structure identification scheme for emergency response coordination.	Building Permit	CCSD Fire	
Prior to Certificate of Occupancy				
81.	In coordination with City Public Works and Police, develop and implement a Traffic Control Plan for Project Grand Opening and other major events, including the opening of successive phases.	Prior to Certificate of Occupancy	Public Works Police	
82.	In coordination with Police and CCSD Fire, the Applicant shall develop and implement a Public Safety Plan. The Public Safety Plan shall, at a minimum, provide for the installation of security cameras and other public safety systems as determined reasonably necessary by the Police Chief for maintaining public safety in and around the Project.	Prior to Certificate of Occupancy	Police CCSD Fire	

	Conditions of Approval	Timing / Implementation	Enforcement / Monitoring	Verification (date and signature)
83.	Approved radio coverage for emergency responders shall be provided. A test conducted by a licensed contractor shall be performed at building or project completion to determine if the public safety communication system is adequate for emergency responder radio coverage. Buildings/structures that cannot support the required level of radio coverage shall install a distributed antenna system with FCC certified signal boosters subject to Cosumnes Fire Department review and approval, which approval shall not be unreasonably withheld.	Prior to Certificate of Occupancy	CCSD Fire	

##

EXHIBIT E

ART PLAN

The New Zoo At Elk Grove

Elk Grove, California

February 22, 2024

CONTENT

03 Introduction

04 Direction and Goals for the Art Program

05 Priorities and Opportunities for Art

08 Artist Selection Process

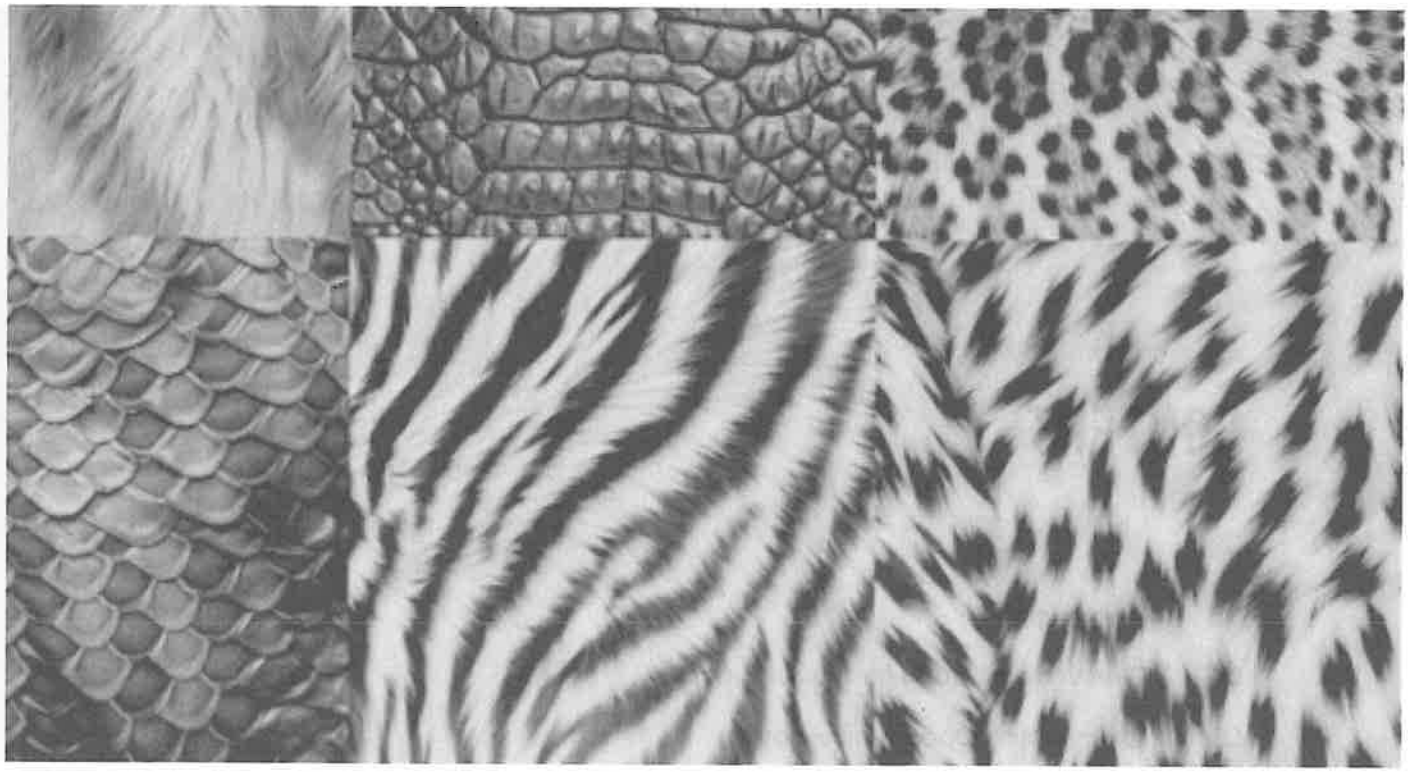
09 Budget

10 Schedule

10 Conservation and Maintenance

11 Gift and Donation Policy

12 Definitions



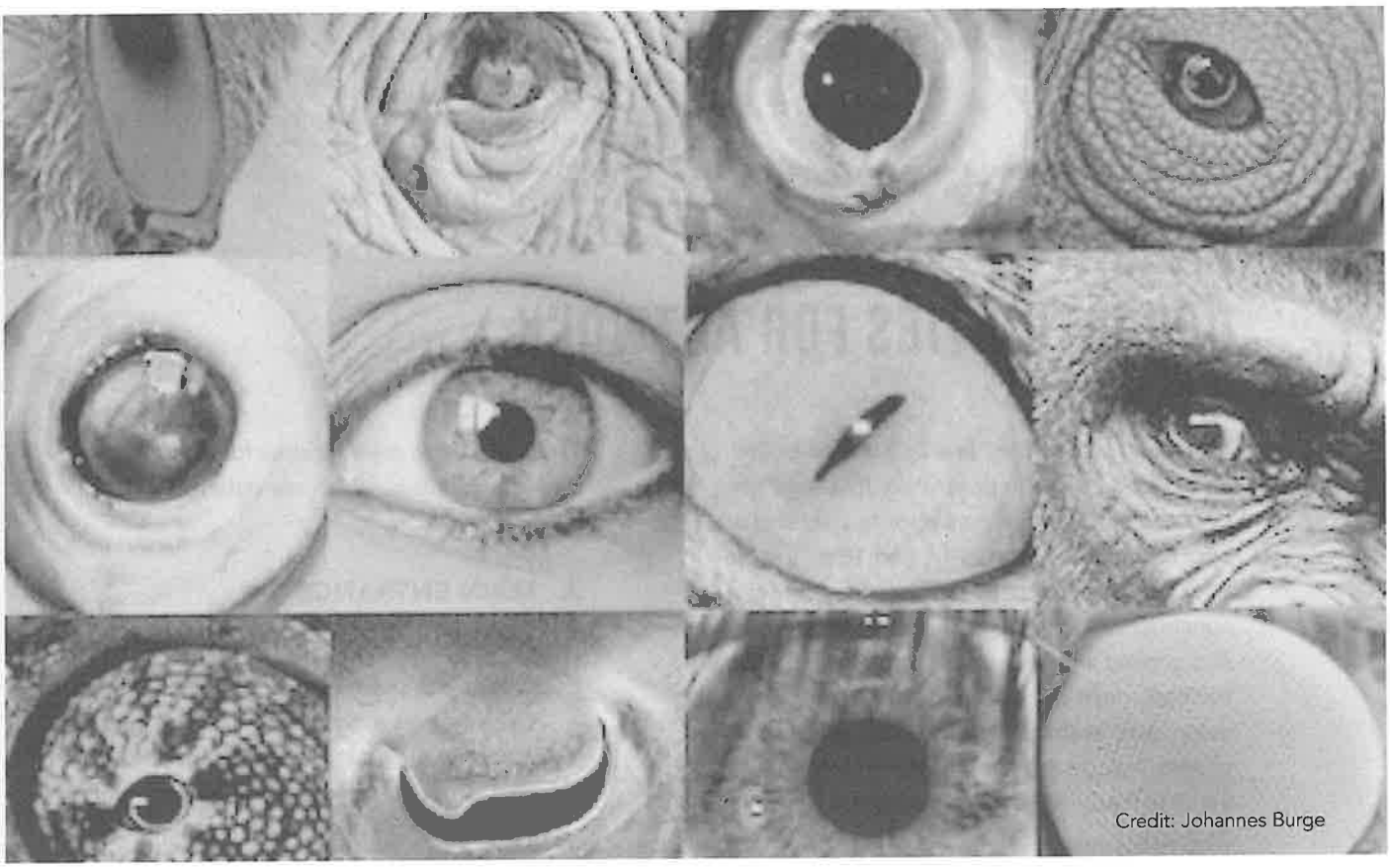
INTRODUCTION

There is an opportunity for the artwork at the New Zoo to accomplish something exceptional and rare. The Zoo can acquire significant works of art that can add another layer to the wonder and incomparable experience of observing wild animals in their natural habitat. This Art Plan supports the selection of artists who are interested in exploring ways of adding to the New Zoo's experience by imagining and creating works of art that interpret the spirit, culture, community, and goals of the New Zoo.

This Art Plan describes what the artworks are meant to accomplish. It describes priority sites and opportunities for art and budgets in the first two major phases of the zoo construction. In addition, it is meant to guide Zoo and City staff, artist selection panels, the Arts Commission, and City Council in future phases of the project and throughout the life of the New Zoo development.

The plan was created with input from City and Zoological Society staff, the City Arts Commission, and the New Zoo design team. It is consistent with the City's Percent-for-Art Program, Public Art Design Guidelines, and public art process and takes into consideration the vision and priorities for the New Zoo.

This plan builds a process whereby the acquisition of world-class art creates another exciting reason to visit the New Zoo and contributes to the New Zoo's goal of creating an entirely new level of experience that will forever redefine Zoological parks.


Credit: Johannes Burge

DIRECTION + GOALS FOR THE ART PROGRAM

For an artist, it is a challenge to compete with the visual marvel of the experience of seeing animals in a Zoo. The typical strategy is to make a realistic animal sculpture, but if the animals are right there in the Zoo, that strategy can be viewed as redundant, because such literal depictions are never as interesting as the animals themselves. The goals below encourage the selection of artists interested in exploring ways of adding to the New Zoo experience by making work about aspects of animal life, animal environments or conservation. Artists might choose tactics like metaphor, scale, play, or humor, among other approaches.

Artworks acquired for the New Zoo should:

- **explore aspects or details of the wildlife that visitors can't see or experience;**
- **create emotional responses that enhance scientific understanding;**
- **consider the New Zoo's conservation priorities;**
- **be integrated with the characteristics of the artwork's location, yet stand alone as unique and distinctive;**
- **contribute to the unique identity of the New Zoo;**
- **be engaging to visitors of all ages; and**
- **add to, not replicate, the experience of viewing animals.**

PRIORITY SITES + OPPORTUNITIES FOR ARTWORK

When completed the New Zoo will be built on a +65-acre site in potentially five separate phases. This plan outlines priority sites and art opportunities for Phases 1A and 1B of the New Zoo. Phases 1A and 1B represent the largest construction phase and the core of the New Zoo project with the development of 18 animal habitats, main entrance building, store, lodge, restaurant, event center and play area. Future phases include an administrative complex and Zoo exhibits featuring animals native to California and Australia.

As the New Zoo grows and future phases are planned, the selection of sites and opportunities for art should prioritize those places that are the most accessible to the public, mark or emphasize major entrances and exits to areas of the Zoo, and consider the goals and direction for art at the Zoo as outlined in this plan.

There are three primary sites for art in Phases 1A and 1B, details of which are outlined below.

A. MAIN ENTRANCE

Approximate Budget: $900,000

A spacious plaza with seating and shade trees creates a place for visitors to gather, meet, wait, and relax before and after their visit. The plaza presents an opportunity for the placement of a monumental and iconic artwork (or artworks), that sets the tone for the visitor's journey and experience and embodies the unique identity of the New Zoo at Elk Grove.

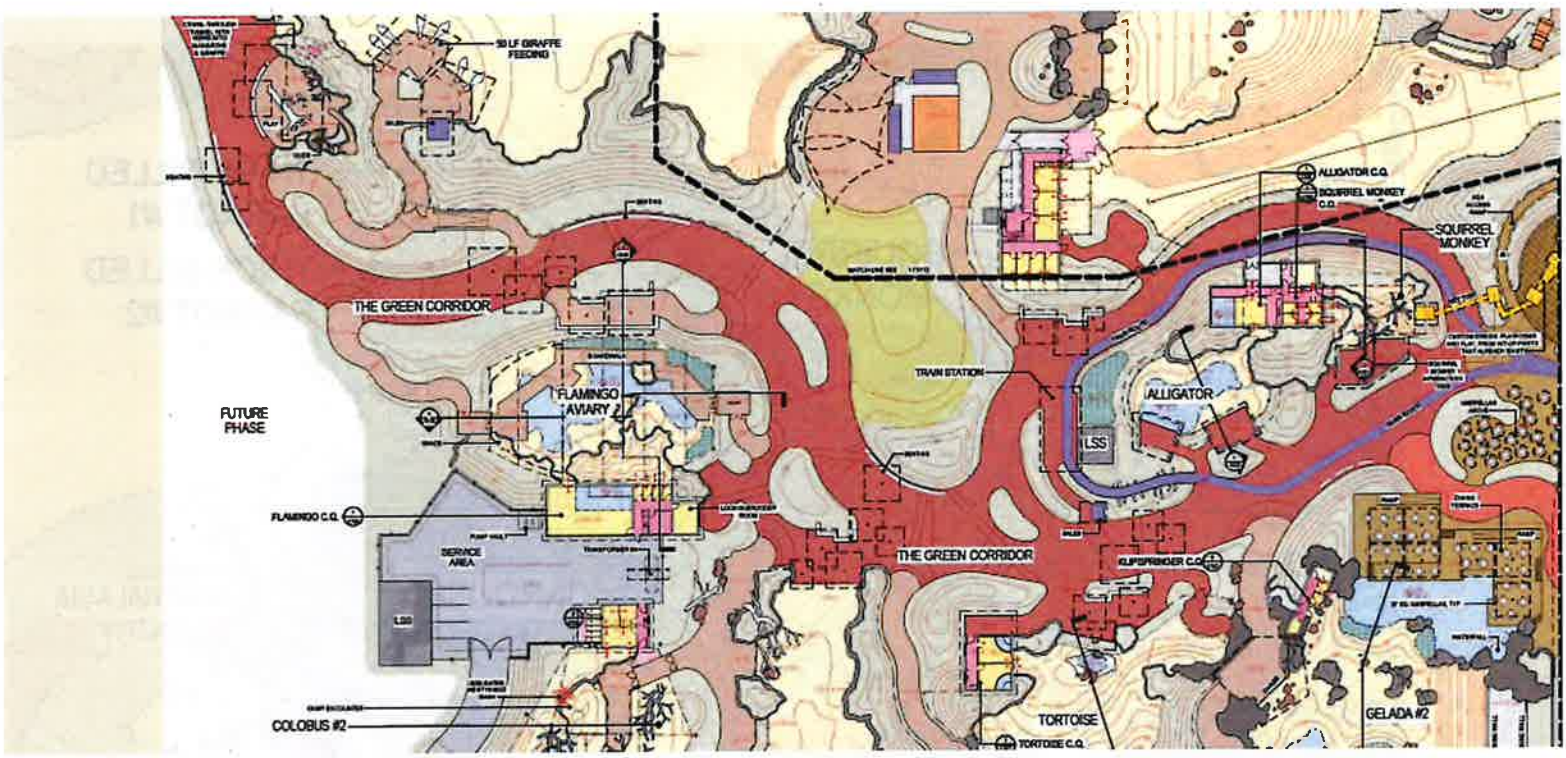
Rendering of Zoo Main Entrance

B. THE GREEN CORRIDOR

Approximate Budget: $500,000

The Green Corridor is a 1,000-foot-long thoroughfare connecting the Zoo's primary exhibits from the entrance to its terminus at the children's play area. The winding river-like pathway is bordered by native California plants, flowers, and trees. Interpretive signs along the way provide places to pause and learn about the nearby exhibits.

The artworks in this area should reinforce the visitor's experience of an intuitive journey through the Zoo. Here, there is an opportunity for the artist to create multiple surprising, intimate, and interconnected artworks.



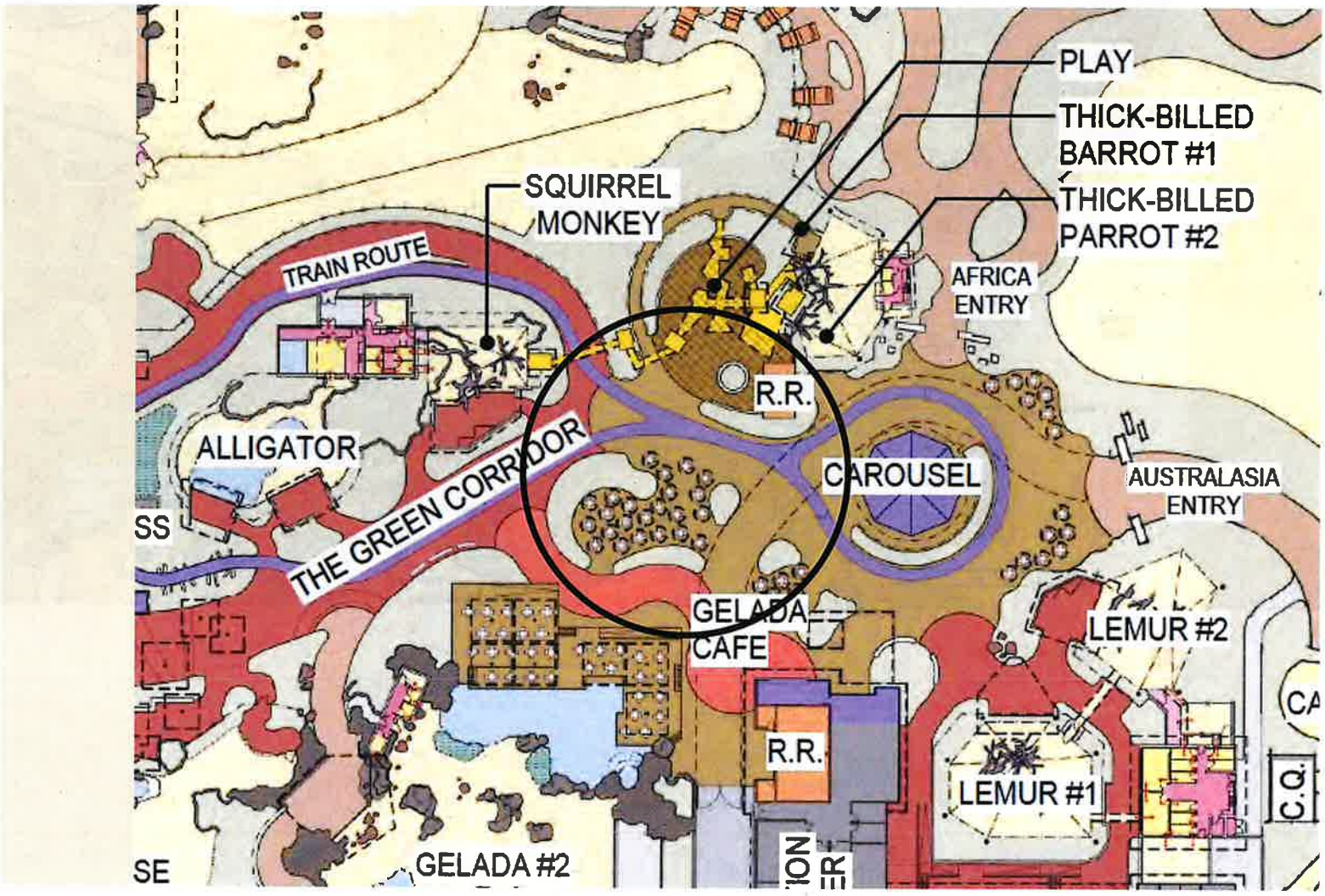
– The Green Corridor

C. PLAY AREA (FUN ZONE)

Approximate Budget: $284,000

The play area is distinguished by color echoing the plumage of the Thick Billed Parrots in the adjacent exhibit. Other features include a carousel, café, and large seating area. A multi-level play structure consisting of three towers, the tallest of which is more than 50-feet high, provides a close-up experience of the forest canopy populated by butterflies, monkeys, and birds.

The art in this area should function as a gateway between the Green Corridor and the Play Area and, like the Play Area itself, it should be colorful, lively, and interactive.



Circle depicts entrance to the Play Area

ARTIST SELECTION PROCESS

Acquisition of artwork for every phase of the Zoo is based on the art selection process, available funds, and eligibility requirements and criteria for selection outlined below.

ELIGIBILITY REQUIREMENTS

Professional and practicing artists are eligible to participate.

SELECTION CRITERIA FOR ARTISTS + ARTWORKS

Artworks in all media may be considered but must be durable and maintainable for the life of the New Zoo.

Criteria for selection for artists and artworks include but are not limited to the following considerations:

- **Artistic Merit:**
  Demonstrated successful creative, innovative, and effective approach in comparable projects and proven mastery or skill in at least one artistic medium.
- **Meet Project Goals:**
  Ability to create an artwork that meets the goals of the project as outlined on page 4.
- **Relevant Skills and Experience:**
  Skills and experience that reflect the applicant's ability to carry out the commission, keep the project within budget, to complete and install the work on schedule, and ability to work collaboratively with other design professionals, stakeholders, and staff. Applicable licenses required to perform the installation of the artwork.
- **Artwork Maintainability:**
  Knowledge of and ability to work with durable materials that are appropriate for long-term exposure in a public environment and that require minimal care and long-term maintenance.
- **Artwork is Appropriate to the Site:**
  Ability to create an artwork for the site that is appropriate in scale, media, and design.
- **Represent the diversity of the Elk Grove community and the Sacramento region.**

ARTIST SELECTION PROCESS

A Review Panel is established by City and Zoologial Society staff in consultation with an art consultant for, at minimum, each phase of the Zoo project.

The Review Panel is comprised of a diverse group of individuals representing the Zoo, Arts Commission, New Zoo design team, and seasoned arts professionals. They bring crucial expertise and perspectives to the art selection process. City staff identifies prospective panelists with recommendations from the Zoological Society. The panel is established to review project applications and recommend artists and artwork proposals to the Arts Commission based on the criteria for selection and goals of the Project.

Each review panel is comprised of a minimum of six voting members including:

- **Two (2) Arts Commissioners**
- **One (1) City staff member**
- **The New Zoo Architect/Lead Designer or designee (1)**
- **Two arts professionals (2)**
- **The Zoo Director or designee (1)**

The art selection process involves multiple steps:

1. **Art Plan approval by Arts Commission**

2. **Art Plan approval by City Council**

3. **Request for Qualifications distributed nationally**

4. **Pre-Qualified Pool Established**
   Based on eligibility requirements and ability of the applicants to accomplish the goals outlined in the Art Plan, a prequalified pool of artists will be established by City staff, a public art professional, and a representative from the New Zoo design team.

5. **Finalist Selection**
   Review Panel selects finalists from the pre-qualified pool of artists based on the quality of the artist/artist teams past work and qualifications as outlined in the New Zoo Art Plan. Finalists are reviewed by the Arts Commission for feedback prior to issuing Service Purchase Orders to the selected finalists to develop artwork proposals including a budget and concept.

6. **Artist/Proposal Selection**
   Review Panel reviews finalist proposals and makes a selection.

7. **Artist/Proposal Selection**
   Elk Grove Arts Commission reviews the Review Panel recommendations and provides a recommendation, with or without conditions, to the City Council.

8. **Artist/Proposal Approval**
   City Council approves or disapproves the artwork proposal, with or without conditions.

BUDGET

The New Zoo art program budget outlined below is for Phases 1A and Phase 1B and may change based on the New Zoo construction budget.

Artwork budgets for future phases of the project will be set by City staff consistent with the 2016 City resolution implementing the percent for the arts program for art in publicly funded facilities and parks, which recommends the following allocation to art:

- **2% of eligible construction costs for the first 10,000,000; and**
- **1% of eligible construction costs above the first $10,000,000.**

It is recommended that any unspent New Zoo art allocation contingencies for Phases 1A, 1B and future phases be set aside for artwork maintenance, outreach, or education programs at the New Zoo.

Zone/Description	Budget
Entry	$900,000
Green Corridor	$500,000
Play Area	$284,000
Subtotal	**$1,684,000**
Administration costs: Program administration and contingency	$421,000
Total	**$2,105,000**

SCHEDULE

Phase 1A and Phase 1B artwork fabrication and installation schedule

Art Plan approved	**May 2024**
Artist selection and conceptual design approval	**2024–2025**
Artwork final design development	**2025**
Artwork fabrication	**2026–2029**
Artwork installation (to coincide with the New Zoo construction schedule)	**2026–2029**

MAINTENANCE + CONSERVATION

The artworks at the Zoo should be designed to last as long as the Zoo. Materials able to sustain long-term exposure to the elements such as bronze, steel, and stone are preferred. Maintenance specific to each artwork is to be considered as part of the selection process. A maintenance plan will be developed for each new artwork.

The Commission will make a recommendation to the City Council on what type of maintenance and/or reconditioning may be required for a specific piece of artwork as part of its recommendation to City Council.

Funding and coordination of artwork maintenance shall be provided by the Zoo.

ART PROGRAMMING + EDUCATION

It is recommended that the performing, visual, and literary arts are used to further engage visitors. Art workshops, classes, and art camps in drawing and poetry for example, can augment visitors' experience of the wildlife, create memorable experiences, and encourage an appreciation of environmental values in daily life.

ARTWORK DONATIONS

These guidelines are to be used for the purposes of accepting artwork donations.

ACCEPTANCE OF A GIFT IS BASED ON THESE CRITERIA:

- **Artistic quality of the artwork.**
- **The extent to which the gift meets the goals outlined in the New Zoo Art Plan.**
- **The receipt of payment for all costs associated with the gift including transportation, installation, and maintenance over time, as determined by the City.**
- **The availability of an appropriate public site for the artwork.**

PROCESS FOR ACCEPTANCE

Step one: The prospective donor submits a written proposal to the Zoo Director and City staff that includes:

- **A visual representation of the artwork.**
- **A written description of the artwork concept, dimensions, and materials.**
- **Artist background information, resume, and/or bio.**
- **Estimated value of the artwork.**
- **A description and estimated cost to maintain the artwork.**
- **A site plan showing the proposed artwork location. Engineering and architectural plans by design professionals should be included for proposed artworks.**

Step 2: Upon affirmative recommendation by the Zoo Director and City staff of potential acceptance of the donation, the proposal is submitted to the Arts Commission for review and recommendation to the City Council.

Step 3: Upon recommendation by the Arts Commission, the donation is submitted to the Elk Grove City Council for review and acceptance or rejection.

DEFINITIONS

Public Art: An original work of art or artwork that is accessible to the public and that has been approved as public art by the Arts Commission and City Council. Appropriations for the acquisition of public art shall not be expended for any art objects which are mass-produced and of standard design. However, limited editions, signed by the artist; original prints; cast sculpture or photographs may be purchased.

Arts Commission: A commission appointed by City Council to recommend artworks to be acquired by the City of Elk Grove.

Arts Professional: An arts professional has expertise in the visual arts. Examples are visual artists, curators, educators, public art administrators and project managers, and others who engage in specialized practices pertaining to the arts.

Art Review Committee: A committee selected by the City Manager and the Zoo Director, in consultation with a knowledgeable art consultant, to review applications and proposals for artwork and make recommendations to the Arts Commission.

CERTIFICATION
ELK GROVE CITY COUNCIL RESOLUTION NO. 2024-070

STATE OF CALIFORNIA)
COUNTY OF SACRAMENTO) ss
CITY OF ELK GROVE)

I, Jason Lindgren, City Clerk of the City of Elk Grove, California, do hereby certify that the foregoing resolution was duly introduced, approved, and adopted by the City Council of the City of Elk Grove at a regular meeting of said Council held on May 8, 2024 by the following vote:

AYES:	***COUNCILMEMBERS:***	***Singh-Allen, Brewer, Robles, Spease, Suen***
NOES:	***COUNCILMEMBERS:***	***None***
ABSTAIN:	***COUNCILMEMBERS:***	***None***
ABSENT:	***COUNCILMEMBERS:***	***None***

Jason Lindgren, City Clerk
City of Elk Grove, California