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From Concept to Construction

Phone: 503-823-7300 Email: bds@portlandoregon.gov 1900 SW 4th Ave, Portland, OR 97201
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APPEAL SUMMARY

Status: Decision Rendered

Appeal ID: 19029	**Project Address:** 4001 SW Canyon Rd
Hearing Date: 2/20/19	**Appellant Name:** Jim Mitchell
Case No.: B-004	**Appellant Phone:** 503-914-6025
Appeal Type: Building	**Plans Examiner/Inspector:** Carrie Heimann, Maureen McCafferty
Project Type: commercial	**Stories:** 1 **Occupancy:** B, U, A-3 **Construction Type:** V-B
Building/Business Name:	**Fire Sprinklers:** No
Appeal Involves: Erection of a new structure	**LUR or Permit Application No.:** 18-270844-CO
Plan Submitted Option: pdf [File 1]	**Proposed use:** Polar Bear Holding Building, LSS Building

APPEAL INFORMATION SHEET

Appeal item 1

Code Section	OSSC 1008.1.8 & 1008.1.9
Requires	Requires doors have 48” clear between doors in series and be readily openable without use of a key or special knowledge or effort.
Proposed Design	A number of exterior doors in the Polar bear Holding Building have typical hollow metal doors placed in the same rough opening as a steel mesh caging door (less than 8” clear between) (see Exhibit 1 plan). The steel mesh caging doors (here and elsewhere in building) have multiple sliding bolt locks that will require keys and special effort/knowledge to open (see Exhibit 1 elevations).
Reason for alternative	The double-in-series configuration is to ensure that there is an animal-proof door (caging) in addition to the standard HMD in exterior openings that separate humans from animals. The proposed design allows zoo keepers to open the HMD and view into the animal space through the caging door before allowing access between the two spaces. This is necessary for zoo keeper safety (see Exhibit 2). The hardware on the caging doors must require keys and special effort/knowledge to open in order to prevent animals from opening the doors. This is essential for both Zoo staff and guest safety. In summary, the doors in an animal holding building cannot comply with measures designed to make egress fast/easy, because these measures would also make it possible for animals to pass through, which poses a significant life safety risk.

Appeal item 2

Code Section	OSSC 1009.13 & 1009.14
Requires	These sections list the types of buildings that allow alternating tread devices and ships ladders as an element of a means of egress. Ships ladders are only allowed in Group I-3.
Proposed Design	The LSS (Life Support System) Building is an F-1 occupancy building housing the filtration and process equipment for the polar bear habitat saltwater pool systems. The pool pumps are designed to be installed below the water level of the pools to allow for water from the surface-level skimmer sumps to flow back down to the pumps via gravity. This downward trajectory of the pipes also prevents the skimmer sumps from overflowing at the exhibit pools. This condition creates a sunken area, or pump pit, within the building. This area is accessed by a ships ladder (see Exhibit 3) and is an element of a means of egress out of the pump pit. Additionally, there are saltwater recovery basins that when filled will have a maximum water level of approximately 10’ above the building FFE. In order for staff to routinely observe and wash down these basins from a platform at 7’-2” above FFE, there are ships ladders provided to access these platforms (see Exhibit 4).
Reason for alternative	Ships ladders are installed throughout the Oregon Zoo’s service areas and facilities, including other LSS facilities. Due to staff familiarity with ascending and descending ships ladders, it would be a safety concern to provide alternating tread devices to access mechanical and process spaces.

APPEAL DECISION

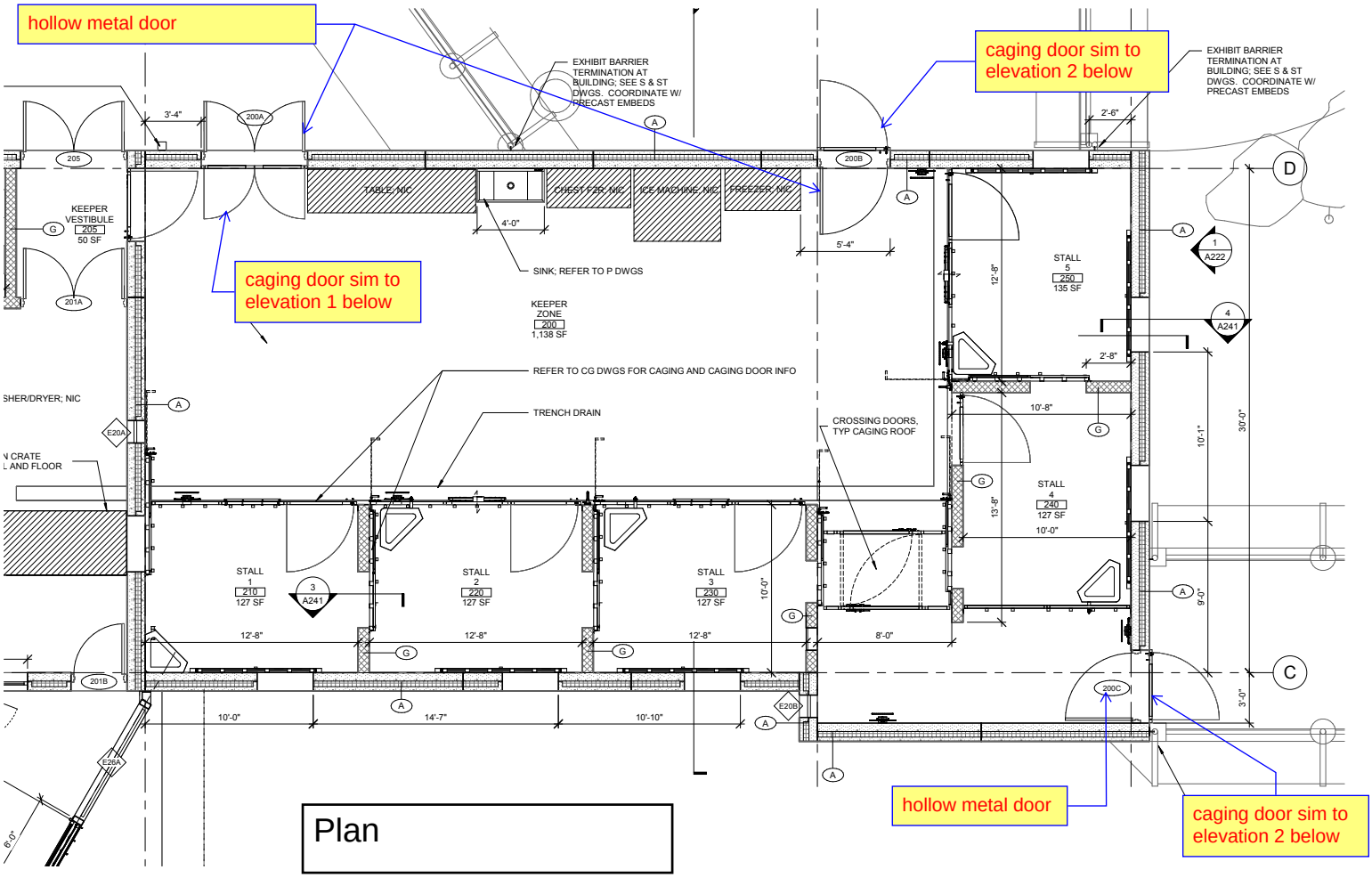
1a. Omission of 48 inch clear space between doors in a series: Granted as proposed.

1b. Use of locks requiring keys and special knowledge and effort to open: Granted as proposed.

2. Use of ship's ladders in B / U occupancy: Granted as proposed.

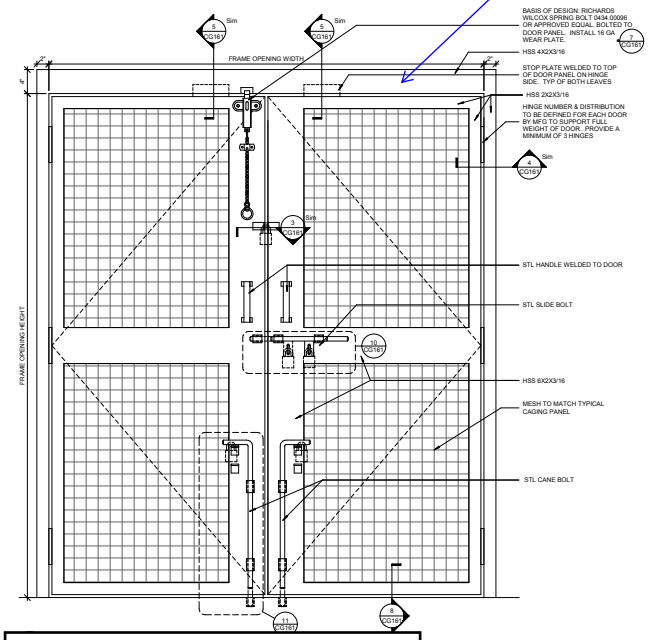
The Administrative Appeal Board finds that the information submitted by the appellant demonstrates that the approved modifications or alternate methods are consistent with the intent of the code; do not lessen health, safety, accessibility, life, fire safety or structural requirements; and that special conditions unique to this project make strict application of those code sections impractical.

Pursuant to City Code Chapter 24.10, you may appeal this decision to the Building Code Board of Appeal within 180 calendar days of the date this decision is published. For information on the appeals process and costs, including forms, appeal fee, payment methods and fee waivers, go to www.portlandoregon.gov/bds/appealsinfo, call (503) 823-7300 or come in to the Development Services Center.

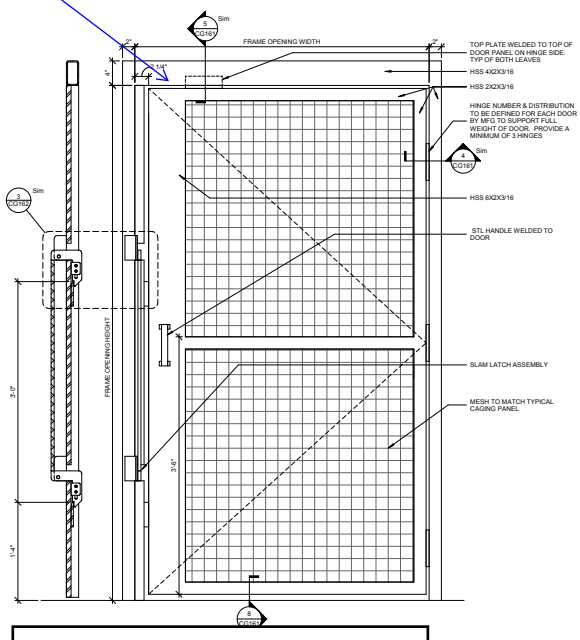


Plan

These caging doors are used for direct animal containment



Elevation 1



Elevation 2

APPEAL - Exhibit 1

be cleaned as needed. Substrates that cannot be washed should be cleaned or replaced to maintain a healthy environment (AWR, 2005). Polar bears should be shifted from the exhibit when chlorine or other chemicals are used to disinfect/clean the exhibit or pool, and any time personnel are in the habitat. Veterinarians at each institution should develop their own cleaning protocols using safe, effective disinfectants and detergents.

2.2 Safety and Containment

Primary Containment: Animal exhibits and holding areas in all AZA-accredited institutions must be secured to prevent unintentional animal egress (AZA Accreditation Standard 11.3.1). Polar bear habitat design must be considered carefully to ensure that all areas are secure, and particular attention must be given to shift doors, gates, keeper access doors, locking mechanisms, and exhibit barrier dimensions and construction. Buildings, exhibits, and grounds must be structurally sound and maintained in good repair, protecting the animals and keepers from injury (AZA 2009).

AZA Accreditation Standard

(11.3.1) All animal exhibits and holding areas must be secured to prevent unintentional animal egress.

As large, powerful carnivores, polar bears pose a serious potential risk to other animals and humans within zoos and aquariums. Polar bears have been seen to jump 1.8 m (6 ft) horizontally and 1.2 m (4 ft) vertically (S. Amstrup, personal communication; D. Moore, personal observation), and habitat containment must take into account their strength, persistence, and agility. The AZA Bear TAG and Polar Bear SSP Program recommend that dry moats or exterior walls be no less than 4.9 m (16 ft) deep or high. The Polar Bear Protection Act (PBPA, 2002) states that barrier walls and dry moats must be 5 m (16.4 ft) high/deep, and glass windows, which allow public viewing, must be 5 cm (2 in) thick. If glass partitions are used, they should be positioned where the bears can avoid being viewed by the public if they so desire (PBPA, 2002). The effect of enrichment objects on viewing windows, including above/underwater pool viewing windows, should be considered before they are designed and used.

Habitat areas can employ a combination of glass, gunnite, solid masonry products, heavy mesh (4-6 gauge), or bars for barriers, the last requiring adequate space to protect staff and public from being scratched or bitten by animals reaching through the barriers (6 m /20 ft between animals and the public is mandated by the Polar Bear Protection Act (PBPA, 2002). Zoos and aquariums with outdoor exhibit areas using wire fence perimeters should consider the nature of the soil. Polar bears are capable of digging, and chain link fencing that makes contact with a natural substrate should be buried to a depth of 91 cm (36 in) along the perimeter in order to prevent digging or bending of the fencing at the bottom. Buried fencing materials should be of a type that will not disintegrate over time. Fencing on hard surfaces with horizontally supported fencing or metal panels is adequate without burial.

Electric fences have been used in the wild to deter polar bears (Wooldridge, 1983), and similar approaches can be used in zoos and aquariums from a containment perspective. A 'hot cable' attached to a concrete footing can be installed at adult bear chest height to prevent polar bears from trying to manipulate fences and one institution successfully uses an electric fence box of 8000 volts strength. Animal access to the exhibit should be by remotely operated shift doors (manual, electric, or hydraulic), preferably sliding or guillotine styled doors. All materials used in the construction of polar bears exhibits and holding areas should be non-toxic, non-abrasive, and easy to clean (PBPA, 2002).

When incorporating containment into the design of habitats, it is recommended that polar bears be allowed to see beyond the bounds of their containment. While high walls are necessary to keep polar bears from escaping, exhibit designs (e.g., bear pits) where the animals are unable to see people or other animals that they can detect by scent or sound should be avoided. There should be elevated areas in the habitat so that the high walls do not result in a pit-like effect. Habitats should also be designed to allow bears with 24/7 access to outdoor areas, and containment considerations should take into account human and animal safety if this continuous access is feasible (e.g., alarmed hot-wire cables; video monitoring, etc.). Safety protocols associated with 24-hour access should be carefully developed to accompany specific containment provisions.

Secondary Containment: Secure secondary containment of animal areas that are directly connected to keeper access areas should be used. All gates securing the bears from public and keeper areas should have redundant security devices (e.g., second lock, security pin). Visual access to all parts of the exhibit and all shift doors should be available to prevent injury. Mirrors can be used to provide visual access to blind corners. All entry points to secured areas of polar bear habitat areas should be appropriately

designed to prevent animal escapes or unauthorized entry by any persons. Utilizing at least two separate sets of high strength, bear-containment doors is beneficial, and additional video surveillance of all polar bears dens and keeper service corridors should be considered. See Chapter 8, section 8.3 for additional information on safety protocols to ensure the safety of animal care staff working with polar bears.

The Polar Bear Protection Act (PBPA, 2002) requires that the public should be kept at least 6 m (20 ft) away (vertically or horizontally) from the polar bears through the use of barrier walls, dry moats, or other safe and appropriate means (AZA Accreditation Standard 11.3.6), except where viewing is provided through a 5 cm (2 in) thick window (PBPA, 2002). Further space may be needed between polar bear maternal nesting dens and the public or other bears depending upon the personalities of the moms.

AZA Accreditation Standard

(11.3.6) Guardrails/barriers must be constructed in all areas where the visiting public could have contact with other than handleable animals.

Safety: AZA-accredited institutions which care for polar bears must have appropriate procedures in place to prevent animal escapes and visitor/staff injuries, as well as to prevent attacks and injuries by these animals.

Emergency protocols: All polar bear emergency safety procedures must be clearly written, provided to appropriate staff and volunteers, and readily available for reference in the event of an actual emergency (AZA Accreditation Standard 11.2.3). Staff training for emergencies must be undertaken and records of such training maintained.

AZA Accreditation Standard

(11.2.3) All emergency procedures must be written and provided to staff and, where appropriate, to volunteers. Appropriate emergency procedures must be readily available for reference in the event of an actual emergency. These procedures should deal with four basic types of emergencies: fire, weather/environment; injury to staff or a visitor; animal escape.

Personnel authorized to utilize firearms for emergency containment of polar bears should have professional training and regular practice. Stored firearms must be in a locked cabinet that will impede unauthorized entry and located in a secure area that is accessible only to authorized personnel trained in their use (AZA Accreditation Standard 11.6.3).

AZA Accreditation Standard

(11.6.3) Stored firearms must be in a locked cabinet of sufficient construction and design to impede unauthorized entry, and located in a secure area and accessible only to authorized personnel trained in their use.

Security personnel must be trained to handle all emergencies in full accordance with the policies and procedures of the institution. In some cases, security personnel may be in charge of the respective emergency (AZA Accreditation Standard 11.6.2). See Chapter 8, section 8.4 for more information on staff training.

AZA Accreditation Standard

(11.6.2) Security personnel, whether staff of the institution, or a provided and/or contracted service, must be trained to handle all emergencies in full accordance with the policies and procedures of the institution. In some cases, it is recognized that Security personnel may be in charge of the respective emergency (i.e., shooting teams).

AZA-accredited institutions must have a communication system that can be quickly accessed in case of an emergency (AZA Accreditation Standard 11.2.4), and must ensure that written protocols define how and when local police or other emergency agencies are contacted and specify response times to emergencies (AZA Accreditation Standard 11.2.5).

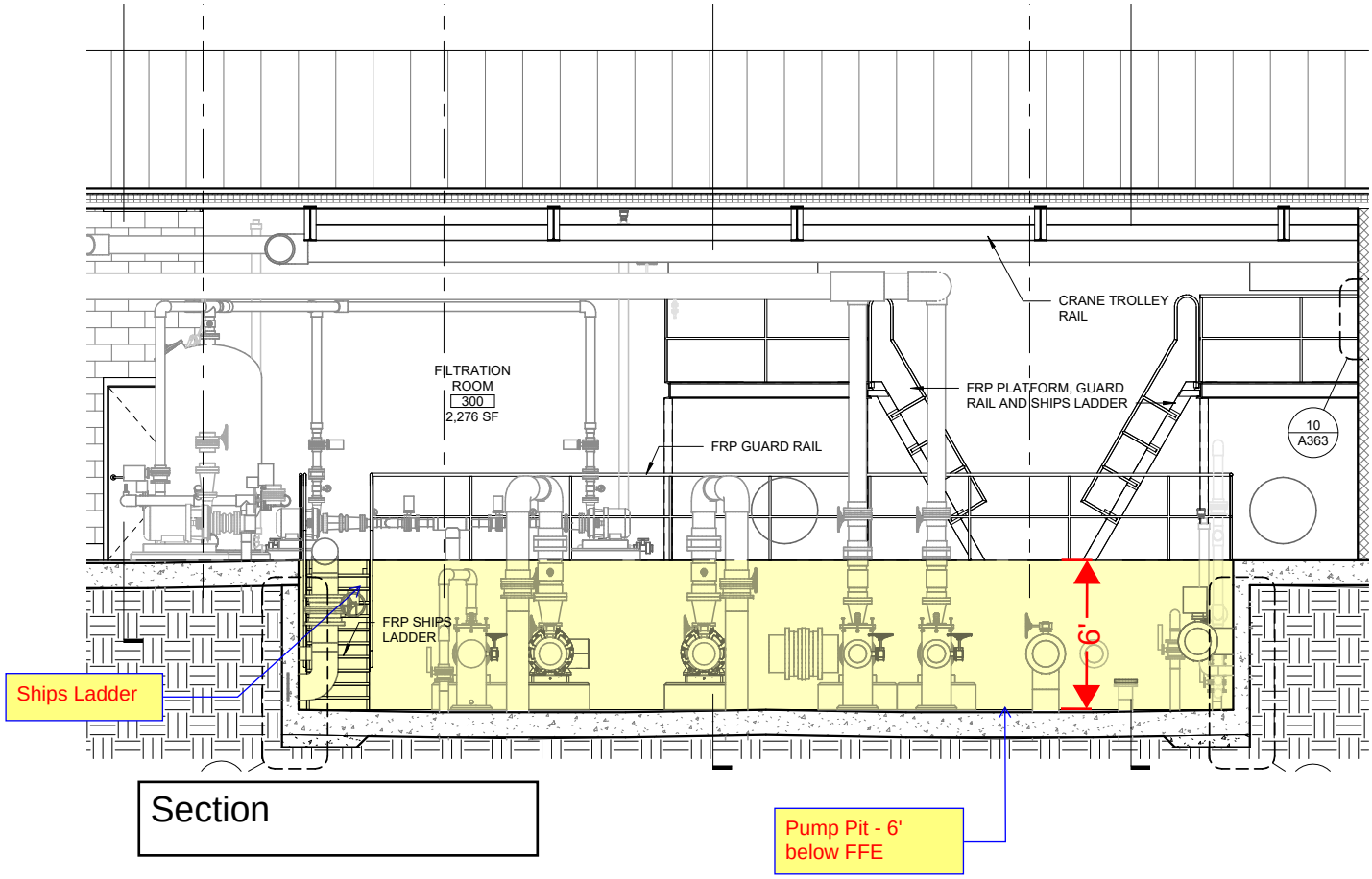
AZA Accreditation Standard

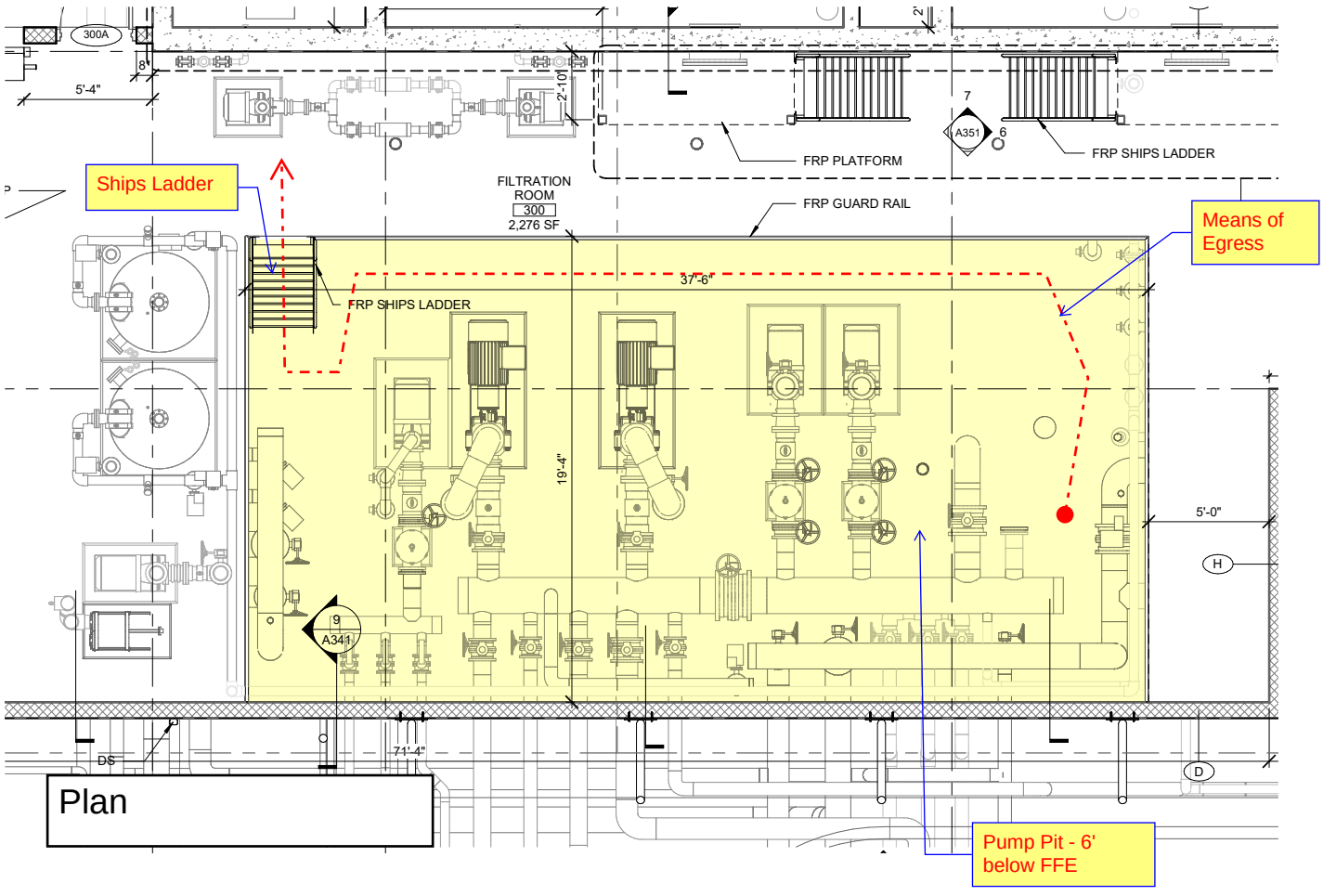
(11.2.4) The institution must have a communication system that can be quickly accessed in case of an emergency.

Polar bears are dangerous animals and each institution should develop their own safety protocols applicable to their facility design, staffing responsibilities, and area operating procedures. These protocols should specifically address animal containment monitoring when bears are provided with 24/7 access to outdoor areas (e.g., the need for trained animal care staff to be present at all times during any 24-hour period, and after-hour response protocols for gun teams, etc.), but such protocols should be in place whether the animals have 24-hour access to the exhibit or not. For facilities that use hot wire as part of their containment system, back-up emergency generators should be considered. Safety protocols should address animal escapes as well as natural disasters relevant to the location of the zoo or aquarium. Protocols should address moving animals at any time of the year, if necessary, and include crate and transportation availability, as well as an agreement with other

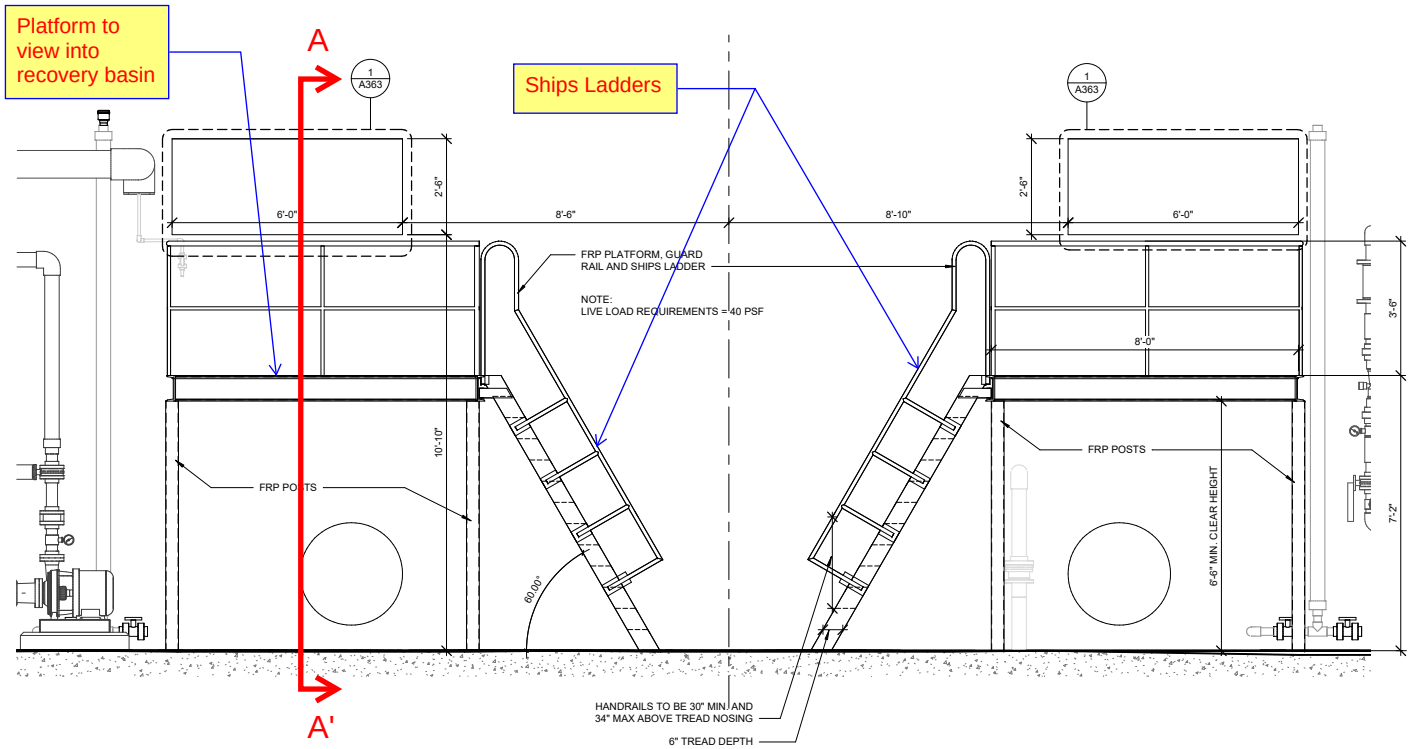
AZA Accreditation Standard

(11.2.5) A written protocol should be developed involving local police or other emergency agencies and include response times to emergencies.

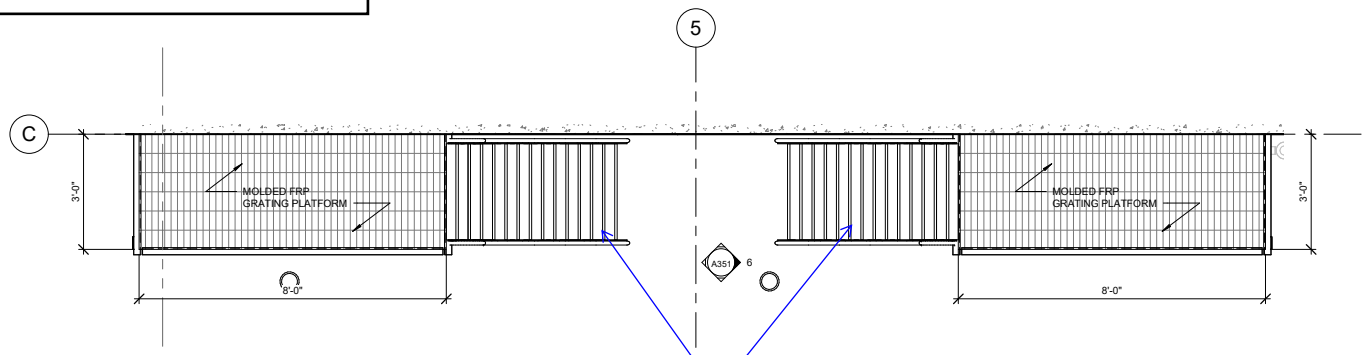




APPEAL - Exhibit 3



Elevation

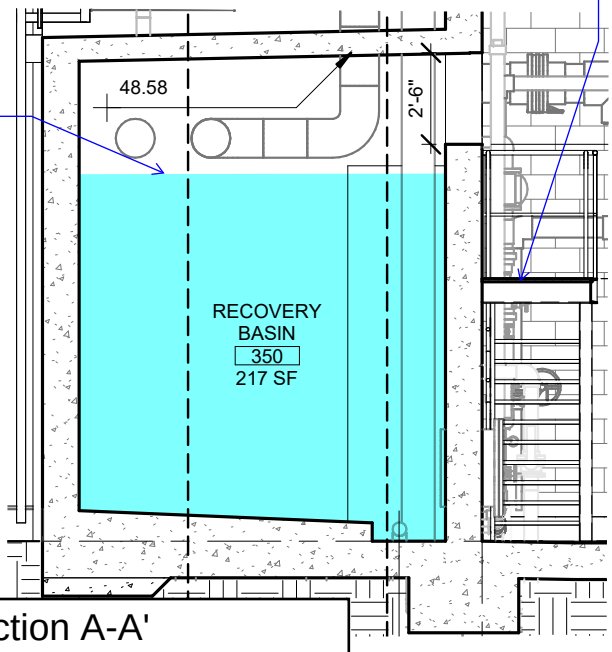


Plan

Ships Ladders

Platform to view inside basin

Maximum water level when basin is filled



Section A-A'

APPEAL - Exhibit 4