memorandum

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To: East Bay Zoological Society
Cc: Darin Ranelletti, Planning and Zoning Division, City of Oakland
Leroy Griffin Assistant Fire Marshal, City of Oakland
Jim Martin, Environmental Collaborative
From: Ethan Ahlberg, Architect, Noll & Tam Architects
Date: November 7, 2012

Re: **Oakland Zoo California Trail**
Fire Fuel Management Plan Framework

This memorandum defines the framework for the required extent of fire fuel management associated with the California Trail expansion project at the Oakland Zoo. In general, fire fuel management will be required at all building and open air structures that will have human occupants and along roadways and pedestrian accessways. The zone in which fire fuel management will be required generally consists of a 30-foot zone from the exterior walls of structures, and a 10-foot zone from roadways and pedestrian accessways. Fire fuel management will not be required along fences, including the Perimeter Fence. Fire fuel management zones are shown on Figures 1, 2, 3, 4, 5, 6, and 7, prepared by the project engineer, Aliquot Associates, and SK-Arch-001.

This Fire Fuel Management Plan Framework was prepared based on a site walk conducted on July 30, 2012 with Leroy Griffin, Assistant Fire Marshal, Dr. Joel Parrott, the Zoo Director, and myself. This was followed by a meeting at City Hall on November 6, 2012 attended by Mr. Griffin, Darin Ranelletti from the City's Planning and Zoning Division, Jim Martin with Environmental Collaborative serving as project biologist, and myself. During the site walk conditions in the vicinity of the Visitor/Interpretive Center, access roads, and Overnight Experience were reviewed. During the follow-up meeting, details on required setback zones, fire fuel management implications, and relevant aspects of the City code were reviewed.

This Framework is considered a conservative approach to fire fuel management. According to Mr. Griffin, the fire fuel management zones may be refined/reduced upon review of the final Fire Fuel Management Plan and during consultation with the state and federal resource agencies. A major focus of the fire fuel management issues relate to the possible impacts on chaparral habitat, which occurs downslope and to the west of the Visitor/Interpretive Center. Refinements to the approved footprint of structures and gondola entrance to the Visitor Center were made during project design to minimize disturbance to areas of chaparral cover. Limited areas of chaparral cover will require fire fuel management on the west side of the Visitor Center, along the access road between the Overlook and Visitor Center, and along the access to the Overnight Experience. A summary of the fire fuel management requirements for the various aspects of the project are summarized below:

Visitor/Interpretive Center and Elevated Public Walkway Treatments:

Fire fuel management will be required within a zone of a maximum of 30 feet from the face of wall or column of the built structure of the Visitor Center and Elevated Walkway, shown as a dashed blue line on the attached **SK-Arch-001** dated November, 2012. The fire fuel management zone will not be measured from any deck or roof overhangs beyond the face of structure that meets the ground. The proposed 3rd floor deck on the southwest façade of the Visitor Center cantilever's 8 feet beyond the structure below, but is of concrete construction. Mr. Griffin has indicated that no additional setback from the cantilever deck is required given the proposed design featuring concrete construction for the bottom two levels of the structure, providing a 3 hour fire rating of all structure up to a height of 24 feet above grade, including the floor of the overhanging deck.

Vegetation Management within the fire fuel management zone will affect limited areas of chaparral cover, as indicated in **SK-Arch-001.** The edge of chaparral canopy was mapped by engineer survey, and is depicted in the figure by the dashed brown line, with areas of affected chaparral cover shown in hatching. An additional zone of chaparral will require routine pruning beyond this fire fuel management zone to provide gondola access into the building, which is also depicted in SK-ARCH-001 and reflected in cross-section **1** in **Figure 2a.**

Controls that would be implemented:

Where chaparral and scrub habitat falls within the identified fire fuel management zone, careful controls will be implemented to minimize disturbance to sensitive habitat. These consist of the following management methods and controls:

1. A biological monitor shall be present during shrub maintenance activities.
2. Shrub maintenance shall be done manually using chain saws and clippers.
3. No shrub stumps shall be removed.
4. Shrub cuttings shall be removed from the area.
5. Thinning shall not result in shrub cover of less than 25%.
6. Thinning shall not be performed more frequently than on an annual basis.
7. Shrubs will be trimmed down to 18" inches height and trees within the zone will have limbs trimmed up to 6 feet in height.

Roadway and Access Treatments:

As indicated by Mr. Griffin during the meeting on November 6, 2012, the fire fuel management zone along the access road to the Visitor/Interpretive Center and access to the Overnight Experience is limited to a 10-foot setback area from the roadway edge. Vegetation management in this 10-foot setback area will focus on removal of French broom and other invasive species, limbing of all trees up to a minimum of 6 feet off the ground, maintenance of grassland cover to a height of six inches, and limited thinning of native chaparral and shrub species where they fall within the 10-foot setback zone. Where native chaparral and scrub vegetation could be affected, the management controls listed above under treatments for the Visitor/Interpretive Center would apply as well. Refer to **Figures 1, 3, 4, 5, 6, 7, and SK-Arch-001.**

Zoo Overnight Experience Area:

Fire fuel management will be required within the circle of platform structures in the overnight experience area, and to 30 feet outside the perimeter of the platform structures. This includes limbing of trees up to a minimum of 6 feet off the ground, and maintenance of grassland cover to a height of six inches. Refer to **Figure 5**.

The above provides a framework for the required fire fuel management activities to be implemented as part of the California Trails project, and the limits of vegetation that could be affected under the management zones. A detailed Fire Fuel Management Plan will be prepared following input from the resource agencies, and further direction from the City Fire Department. The final Fire Fuel Management Plan will provide additional information on methods, schedule, and reporting requirements, among other details.

Please contact me at 510.542.2200 if you have any questions.

Kind Regards,

Ethan Ahlberg
Architect

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Committed to the 2030 Challenge

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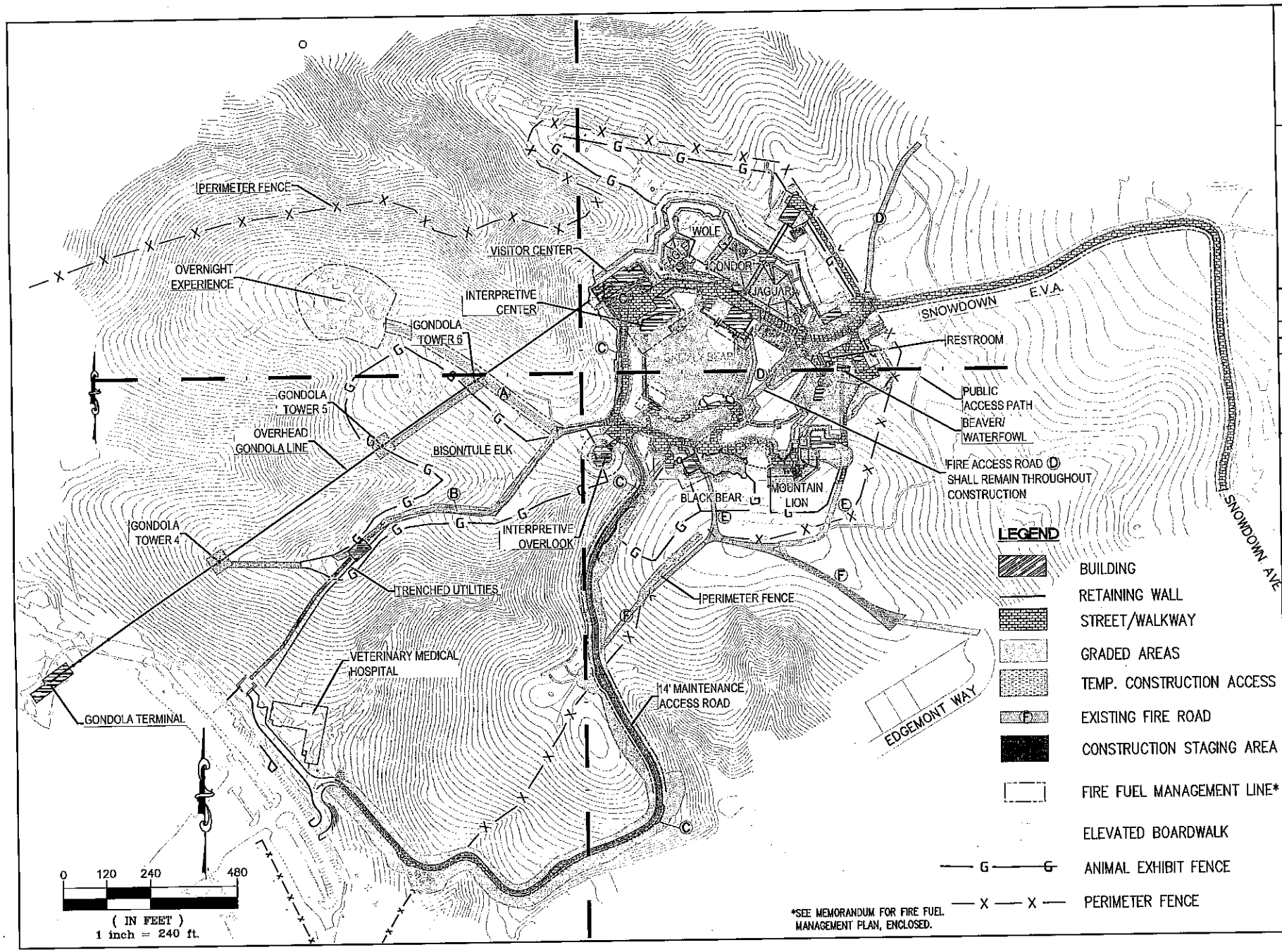

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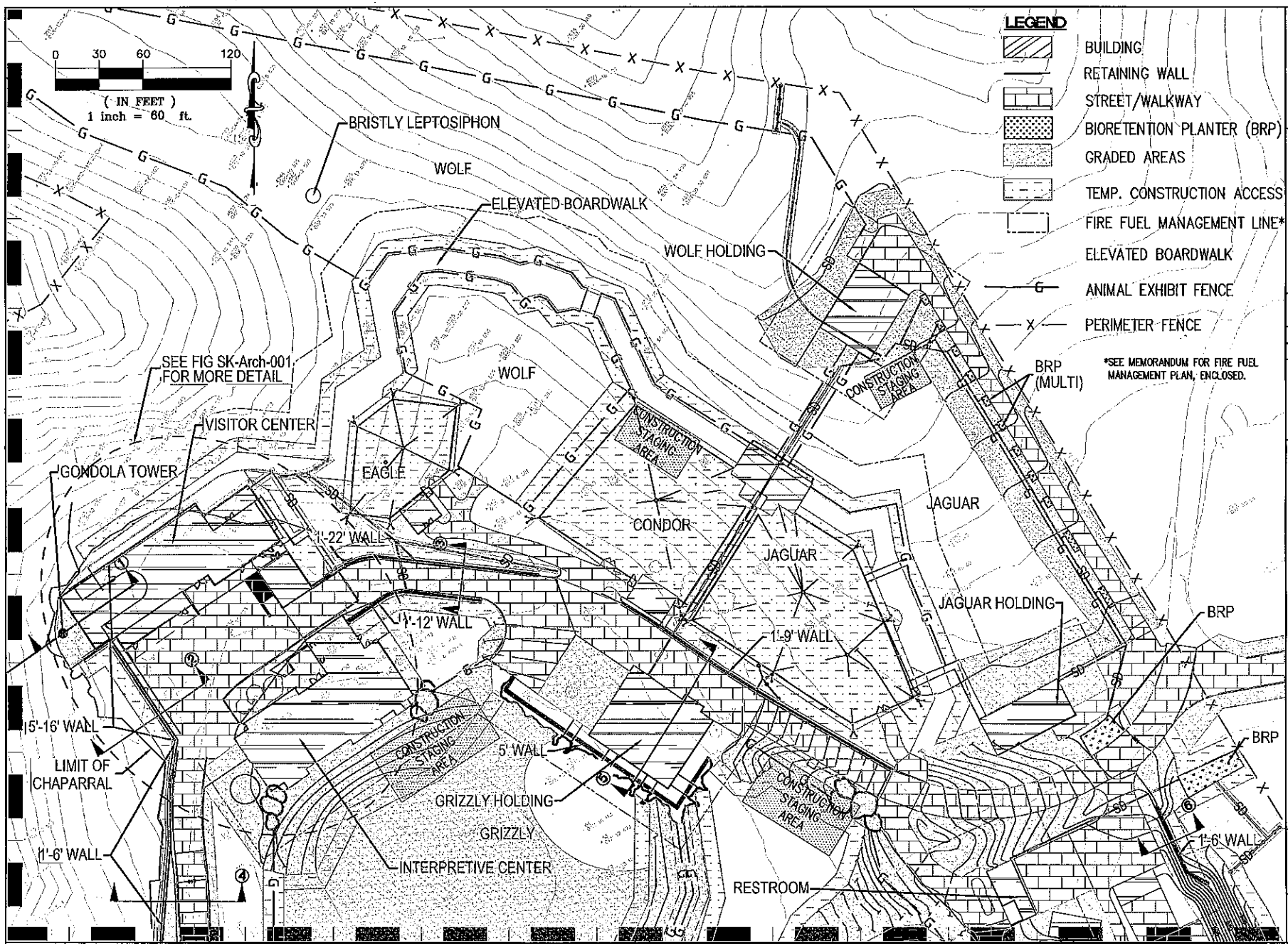
Planners, Civil Engineers Surveyors

No.	BY	DATE	REVISIONS

OVERALL SITE EXHIBIT
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO 2080022
SCALE
DATE 11/7/2012
DESIGN
DRAWN
APPROVED

DRAWING NUMBER
FIG 1
1 OF 1


0 30 60 120
(IN FEET)
1 inch = 60 ft.
LEGEND
BUILDING
RETAINING WALL
STREET/WALKWAY
BIORETENTION PLANTER (BRP)
GRADED AREAS
TEMP. CONSTRUCTION ACCESS
FIRE FUEL MANAGEMENT LINE*
ELEVATED BOARDWALK
ANIMAL EXHIBIT FENCE
PERIMETER FENCE
*SEE MEMORANDUM FOR FIRE FUEL MANAGEMENT PLAN, ENCLOSED.
BRISTLY LEPTOSIPHON
WOLF
ELEVATED BOARDWALK
WOLF HOLDING
SEE FIG SK-Arch-001 FOR MORE DETAIL
VISITOR CENTER
GONDOLA TOWER
EAGLE
WOLF
CONSTRUCTION STAGING AREA
CONDOR
JAGUAR
JAGUAR
JAGUAR HOLDING
BRP (MULTI)
BRP
BRP
1'-22' WALL
1'-12' WALL
1'-9' WALL
5'-16' WALL
LIMIT OF CHAPARRAL
5' WALL
GRIZZLY HOLDING
GRIZZLY
INTERPRETIVE CENTER
RESTROOM
1'-6' WALL
1'-6' WALL
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Surveyors
No. BY DATE REVISIONS
SITE EXHIBIT
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO
JOB NO 206022
SCALE
DATE 11/7/2012
DRAWING NUMBER
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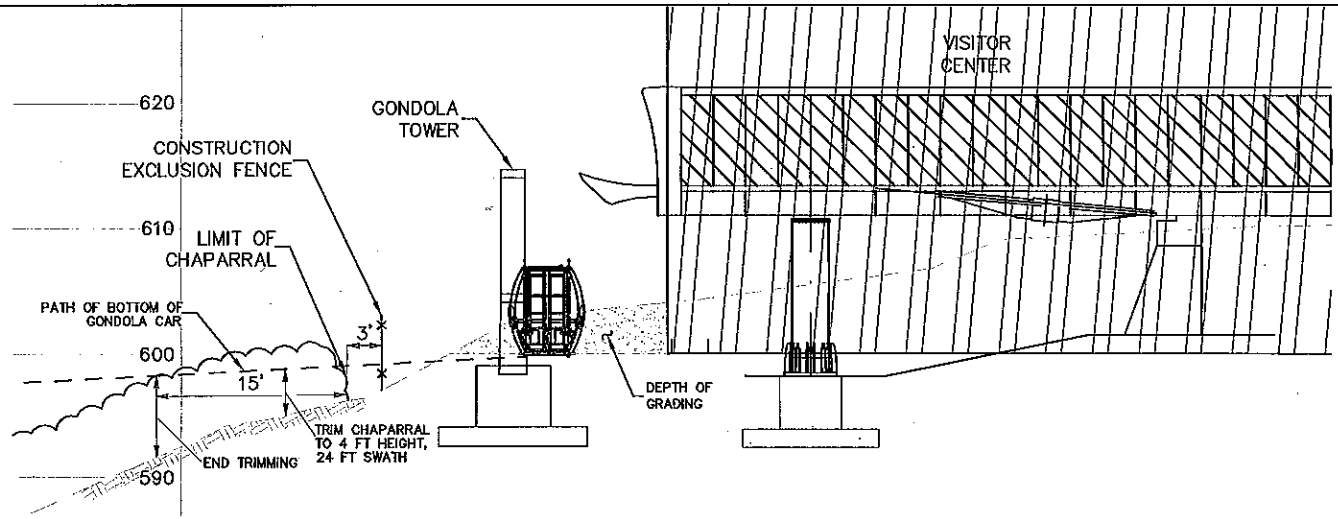
1 of 1



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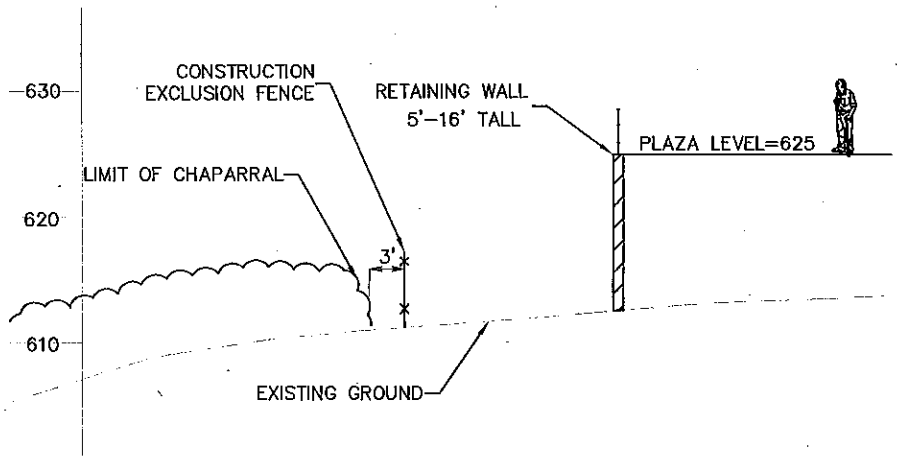

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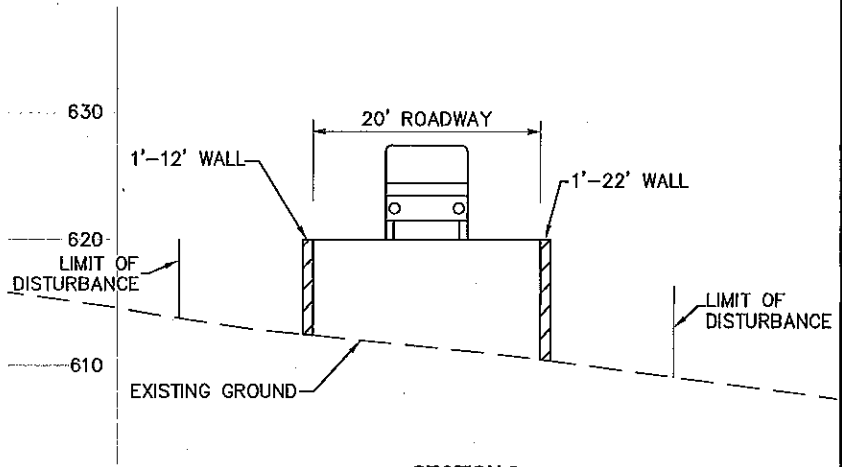

SECTION 3
H: 1"=10'
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SECTIONS
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO. 3090122
SCALE
DATE 10/17/2012
DESIGN
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APPROVED

DRAWING NUMBER
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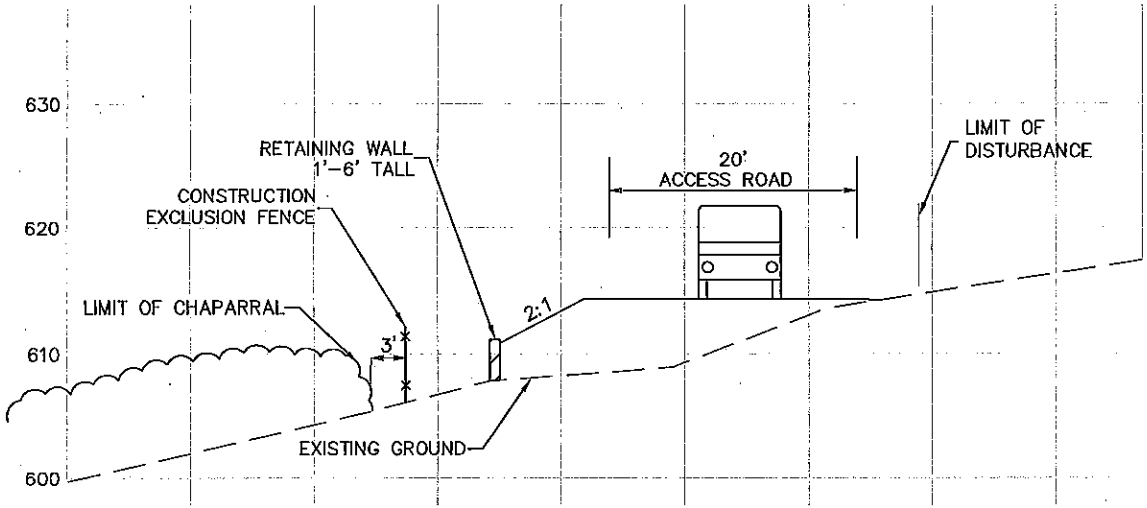
1 OF 1



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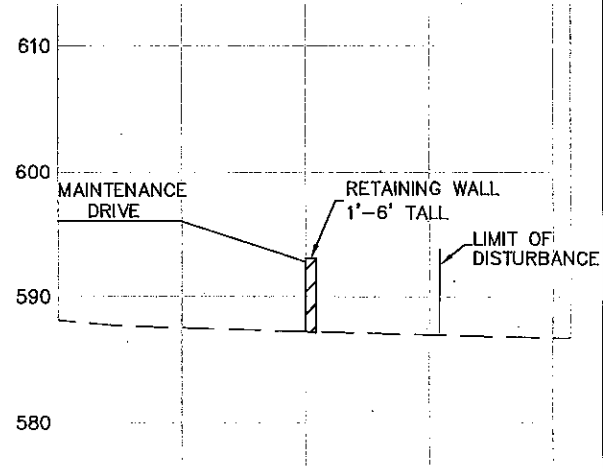

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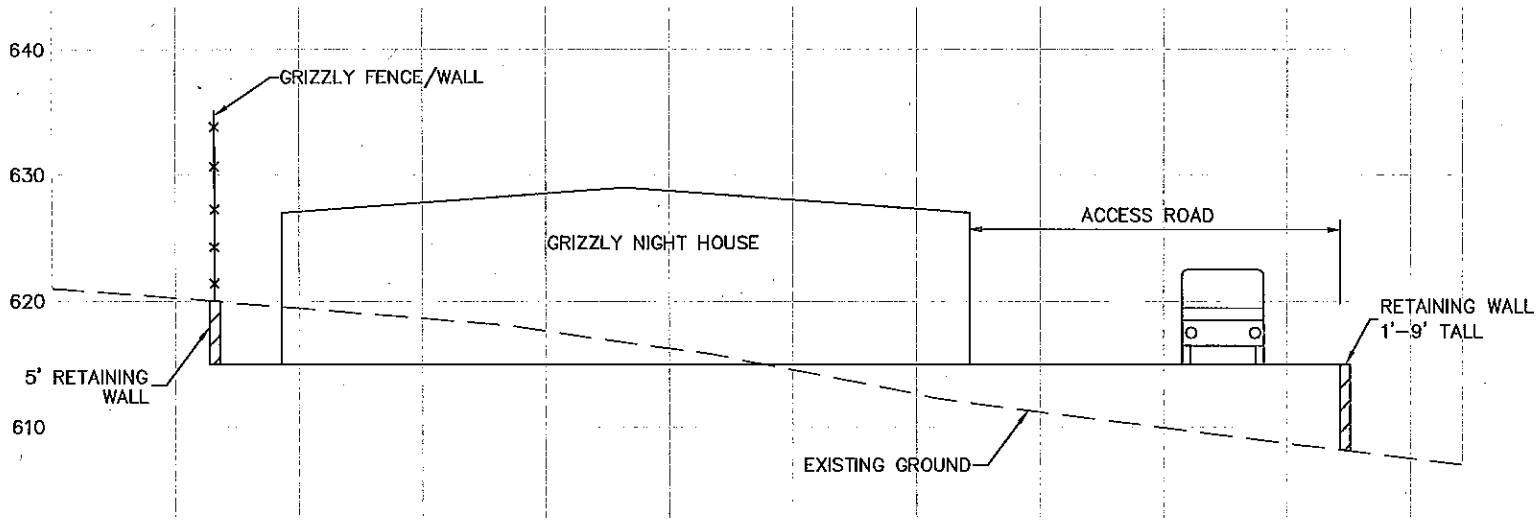

SECTION 5
H: 1"=10'
V: 1"=10'

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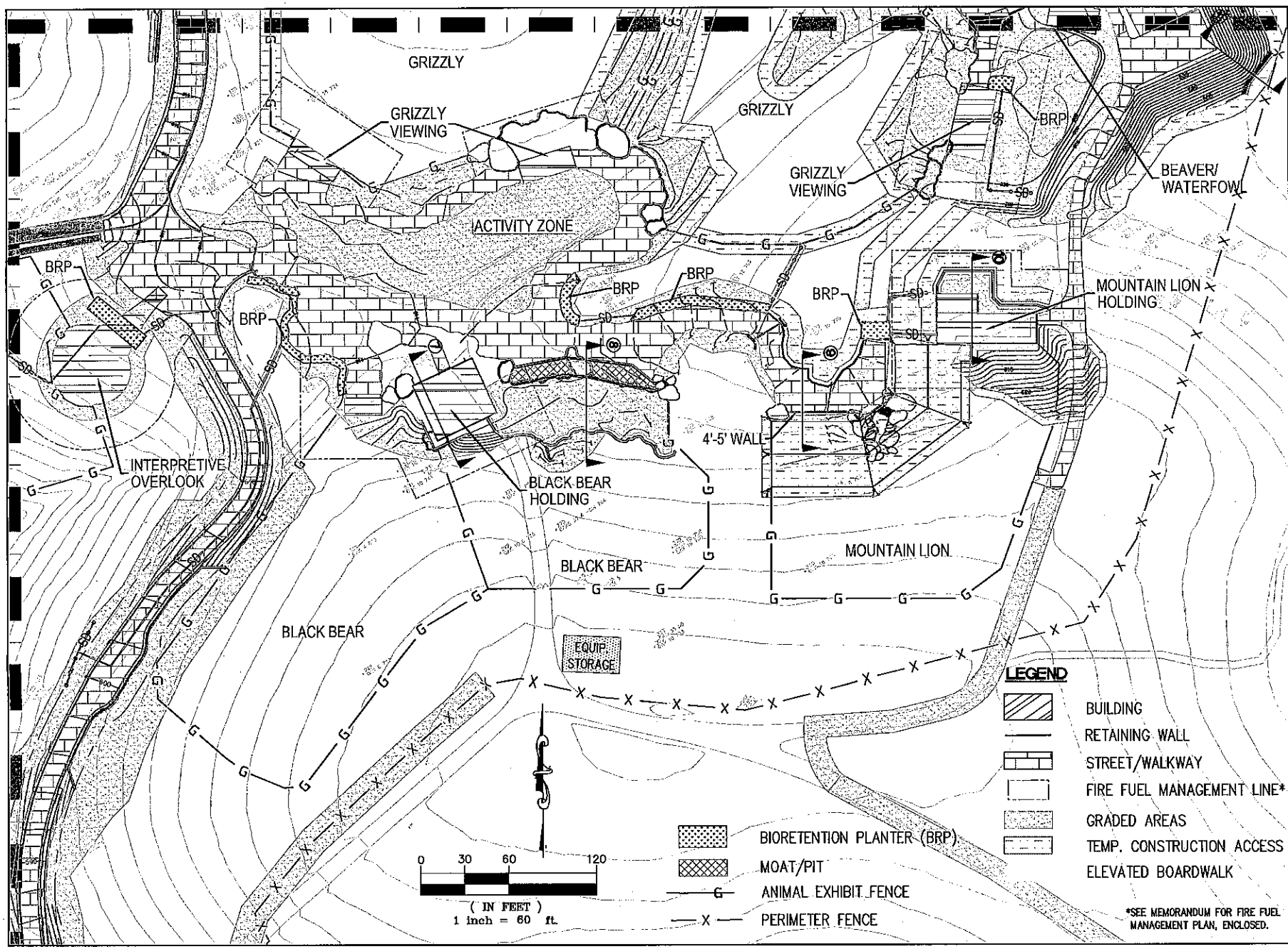
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO.	2006002
SCALE	
DATE	10/17/2012
DESIGN	
DRAWN	
APPROVED	

DRAWING NUMBER
FIG 2b
1 of 1



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CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO 2006022
SCALE
DATE 11/7/2012
DESIGN
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CHECKED
APPROVED

DRAWING NUMBER
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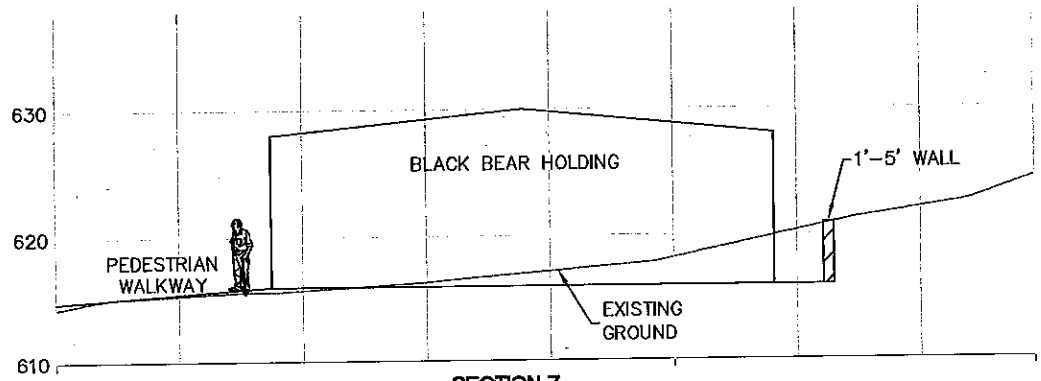
1 of 1



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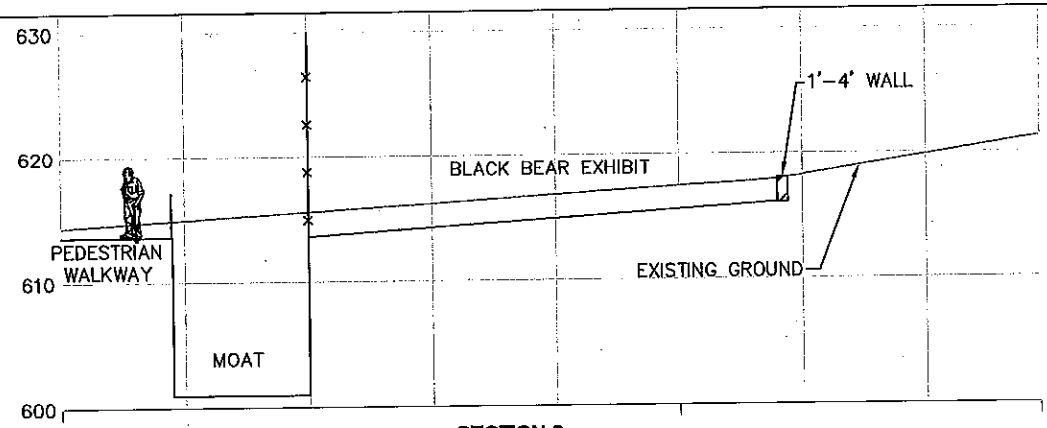

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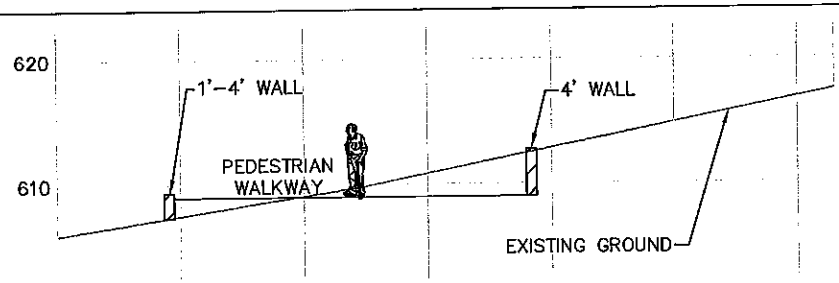

SECTION 9
H: 1"=10'
V: 1"=10'

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SECTIONS
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO. 2206022
SCALE
DATE 10/17/2012
DESIGN
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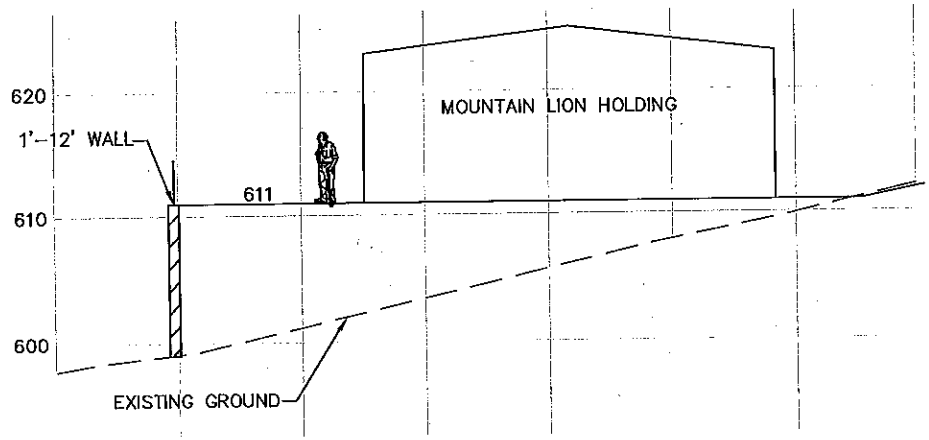
DRAWING NUMBER
FIG 3a
1 of 1



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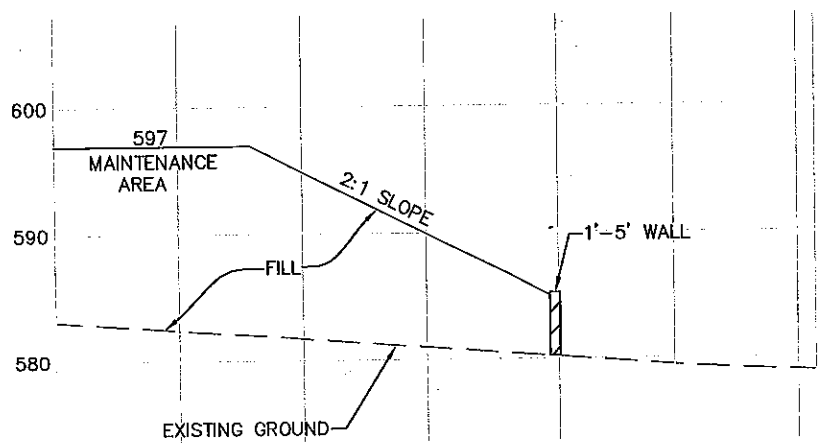

SECTION 11
H: 1"=10'
V: 1"=10'

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CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO. 2006022
SCALE
DATE 10/17/2012
DRAWN
DESIGN
APPROVED

DRAWING NUMBER
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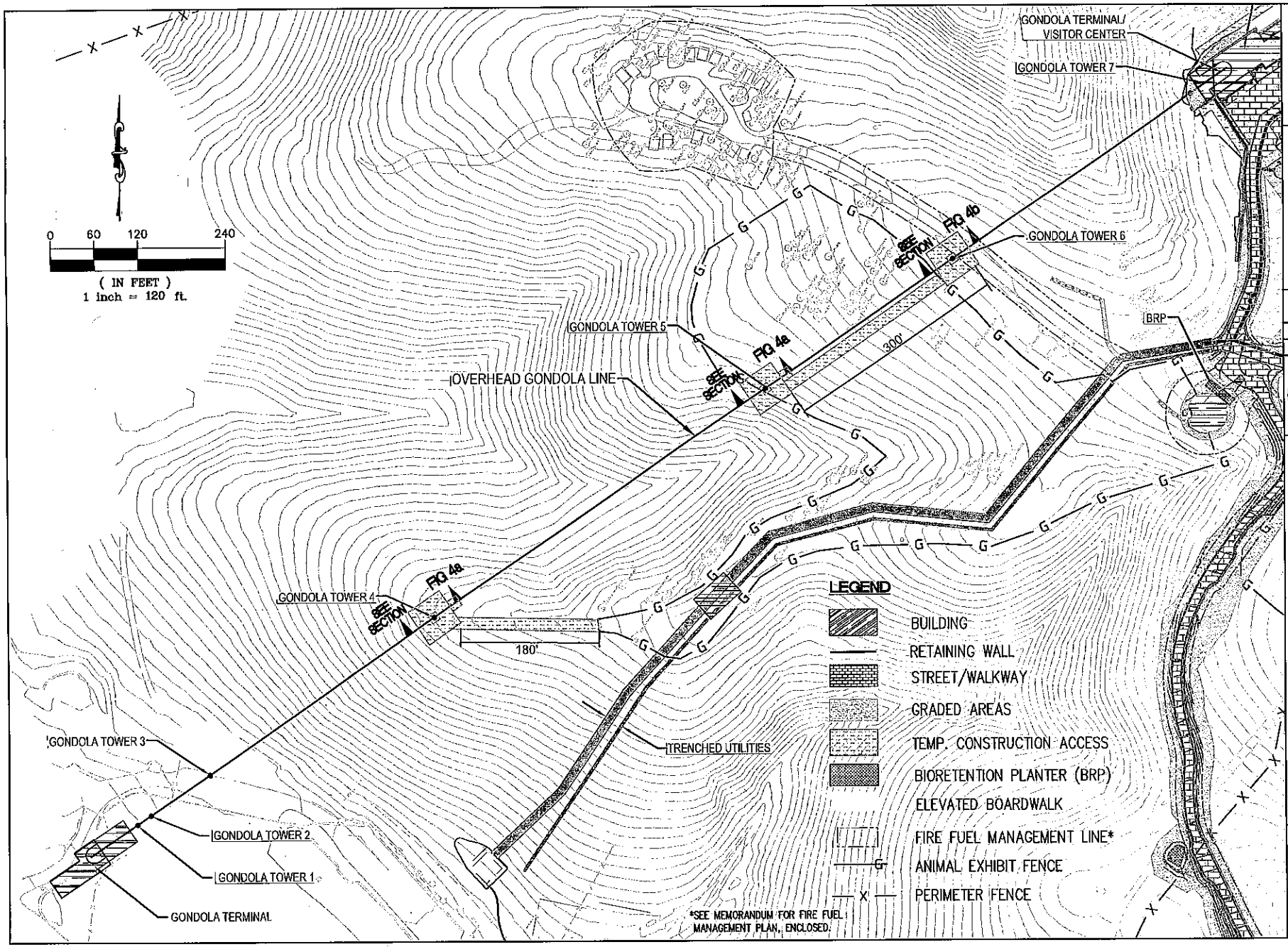
1 OF 1



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SITE EXHIBIT
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO. 200622
SCALE
DATE 11/7/2012
DESIGN
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DRAWING NUMBER
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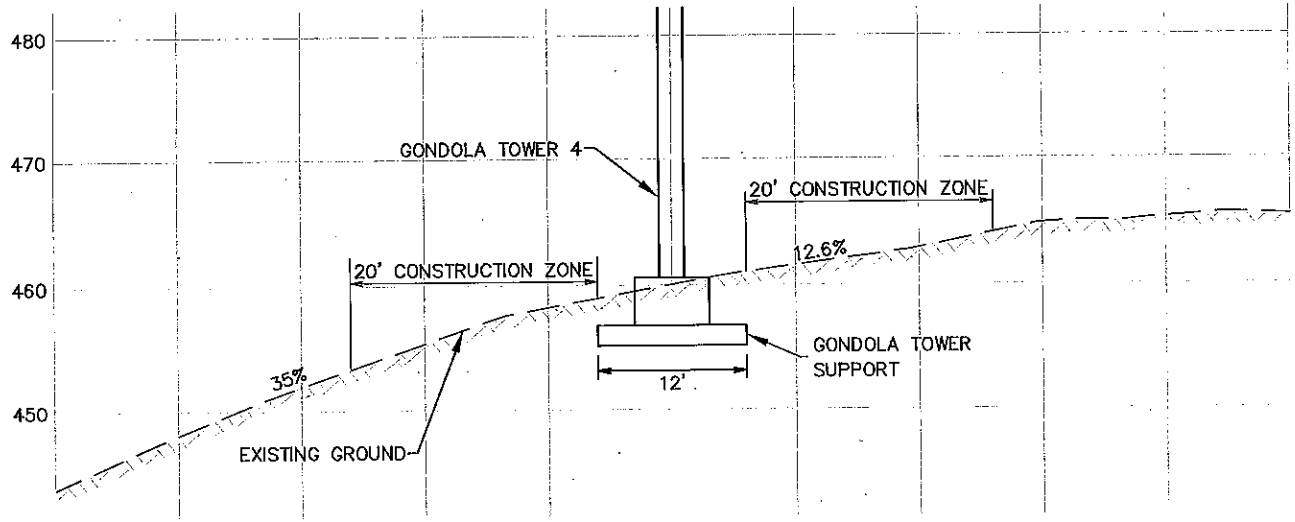
1 of 1



SECTION: GONDOLA TOWER 4

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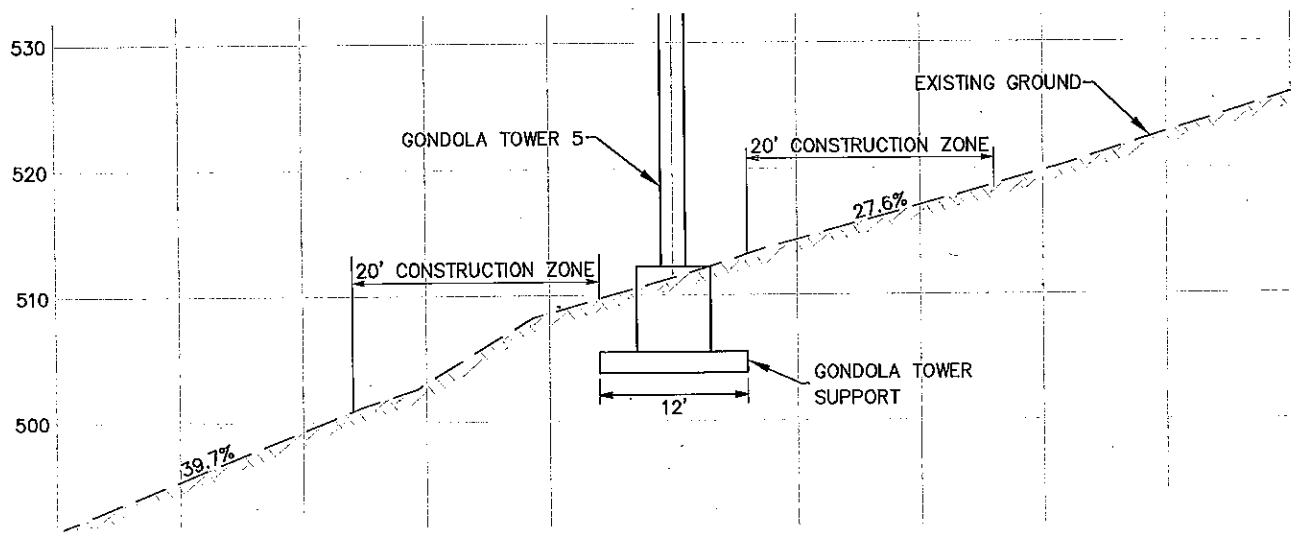

SECTION: GONDOLA TOWER 5

H: 1"=10'
V: 1"=10'

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No.	BY	DATE	REVISIONS

GONDOLA TOWER SECTIONS
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO. 2090522
SCALE
DATE 10/17/2012
DESIGN
DRAWN
APPROVED

DRAWING NUMBER
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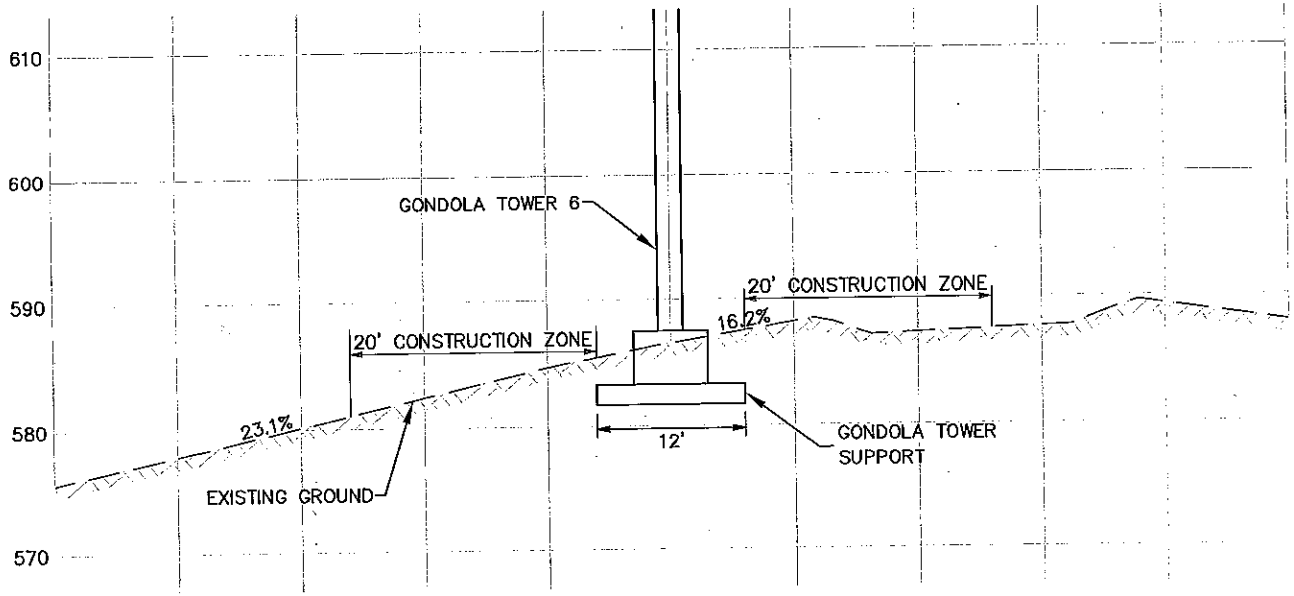

SECTION: GONDOLA TOWER 6
H: 1"=10'
V: 1"=10'

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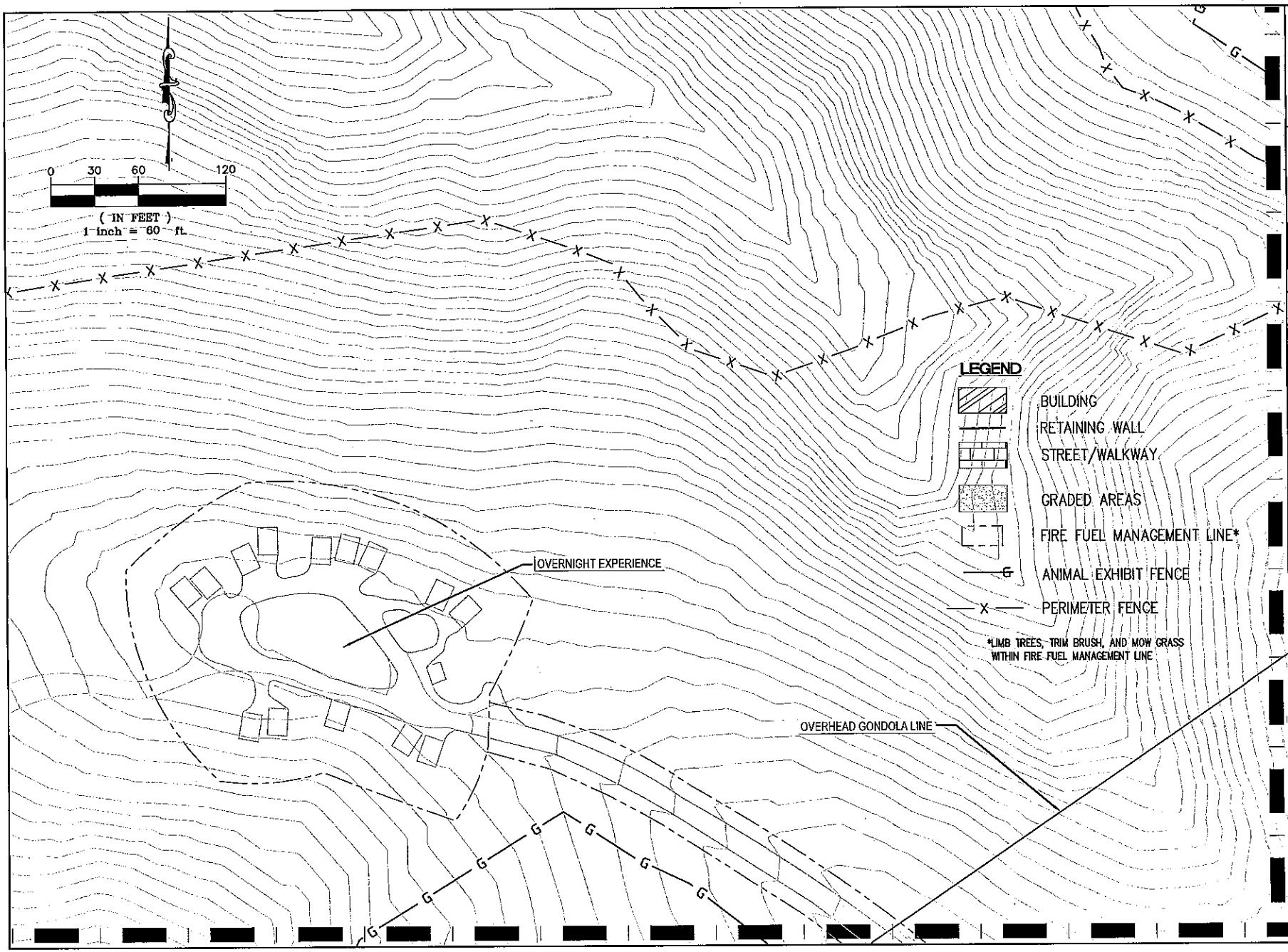
GONDOLA TOWER SECTIONS
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO 2200022
SCALE
DATE 10/17/2012
DESIGN
DRAWN
APPROVED

DRAWING NUMBER
FIG 4b
1 OF 1



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SITE EXHIBIT
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO. 20K022
SCALE
DATE 11/7/2012
DESIGN
DRAWN
APPROVED

DRAWING NUMBER
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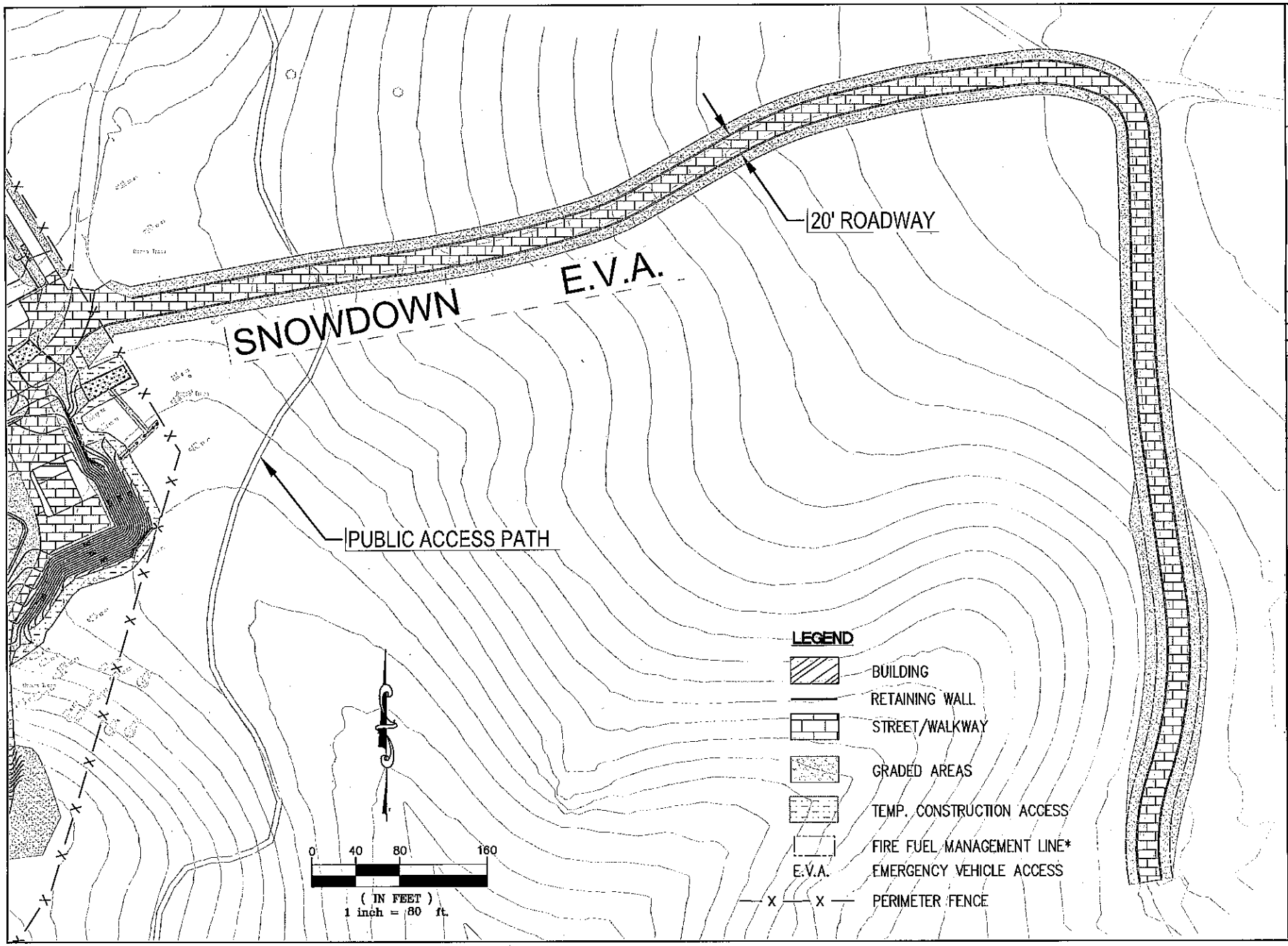
1 of 1



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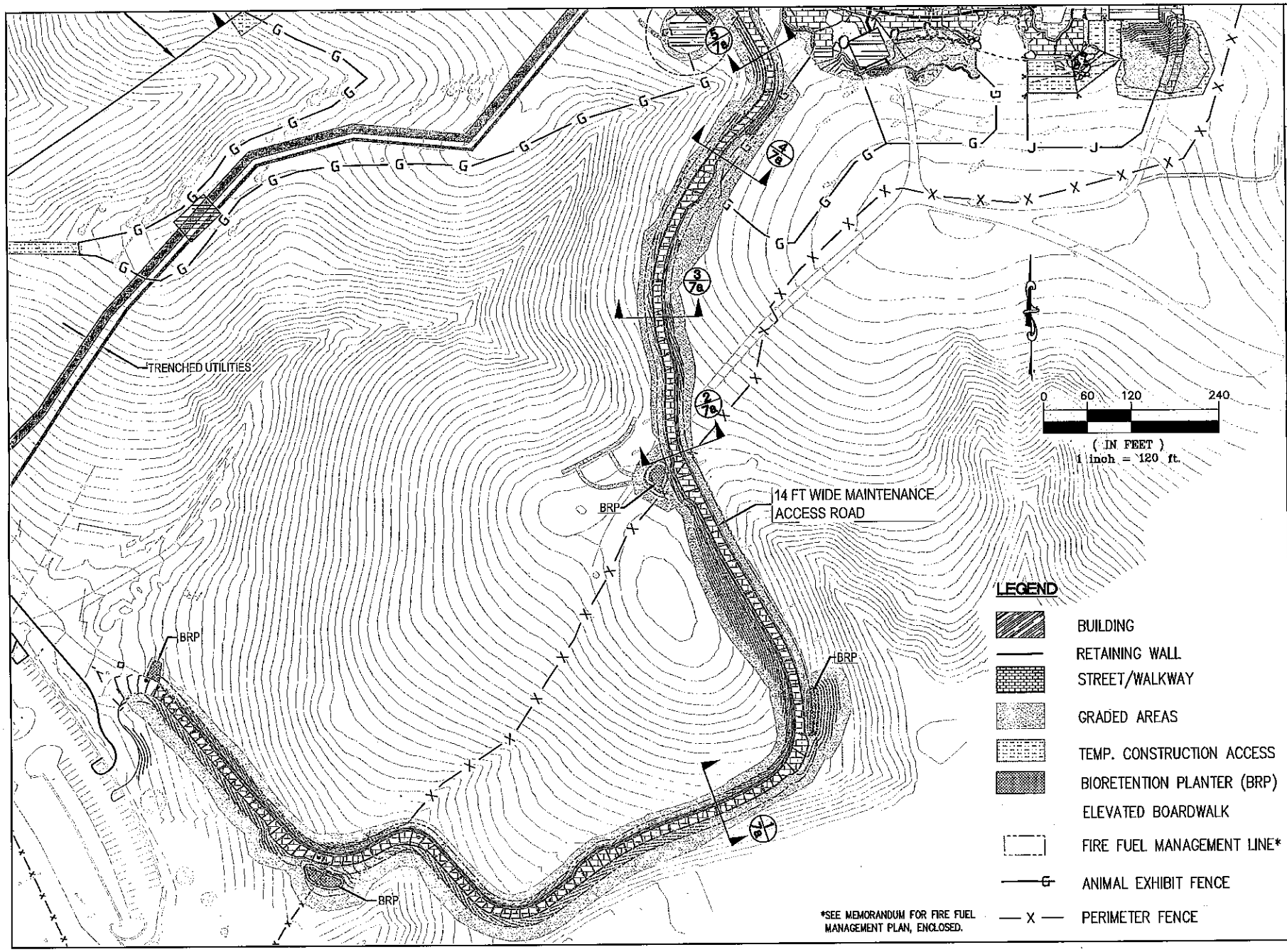
SITE EXHIBIT-SNOWDOWN EVA
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO 209022
SCALE
DATE 11/7/2012
DESIGN
DRAWN
APPROVED

DRAWING NUMBER
FIG 6
1 of 1



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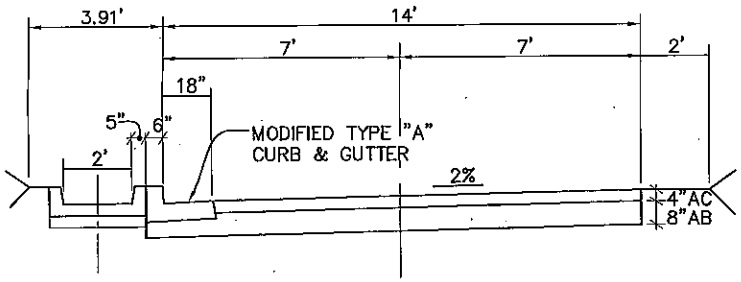
MAINTENANCE ACCESS ROAD
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO. 2080022
SCALE
DATE 11/17/2011
DRAWN
REVIEW
APPROVED

DRAWING NUMBER
FIG 7
1 OF 1



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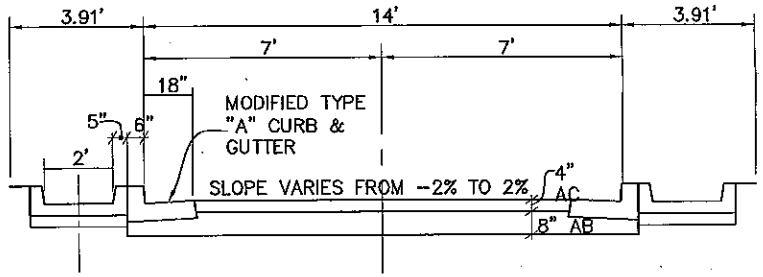

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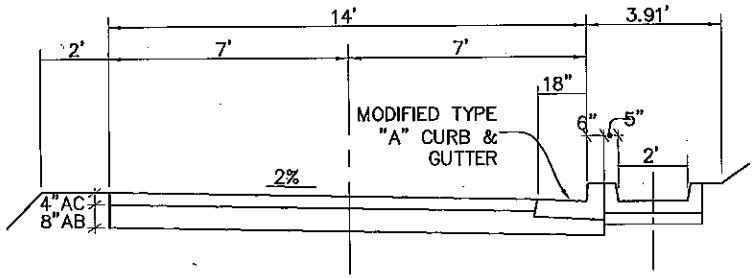

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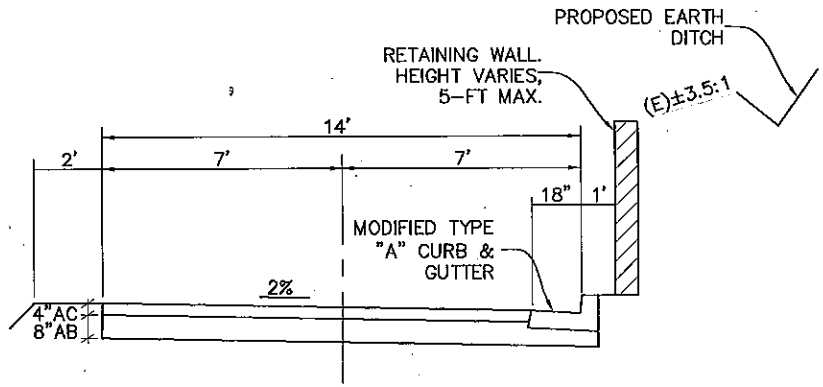

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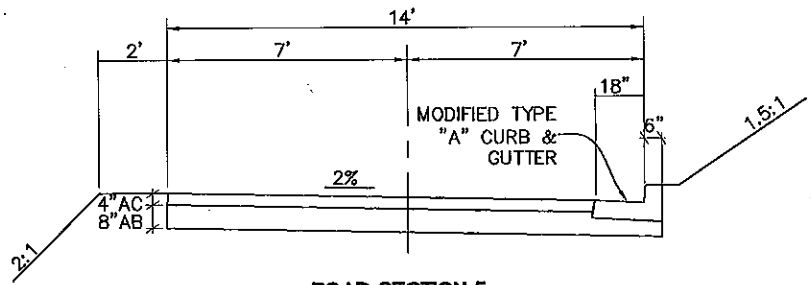

ROAD SECTION 5

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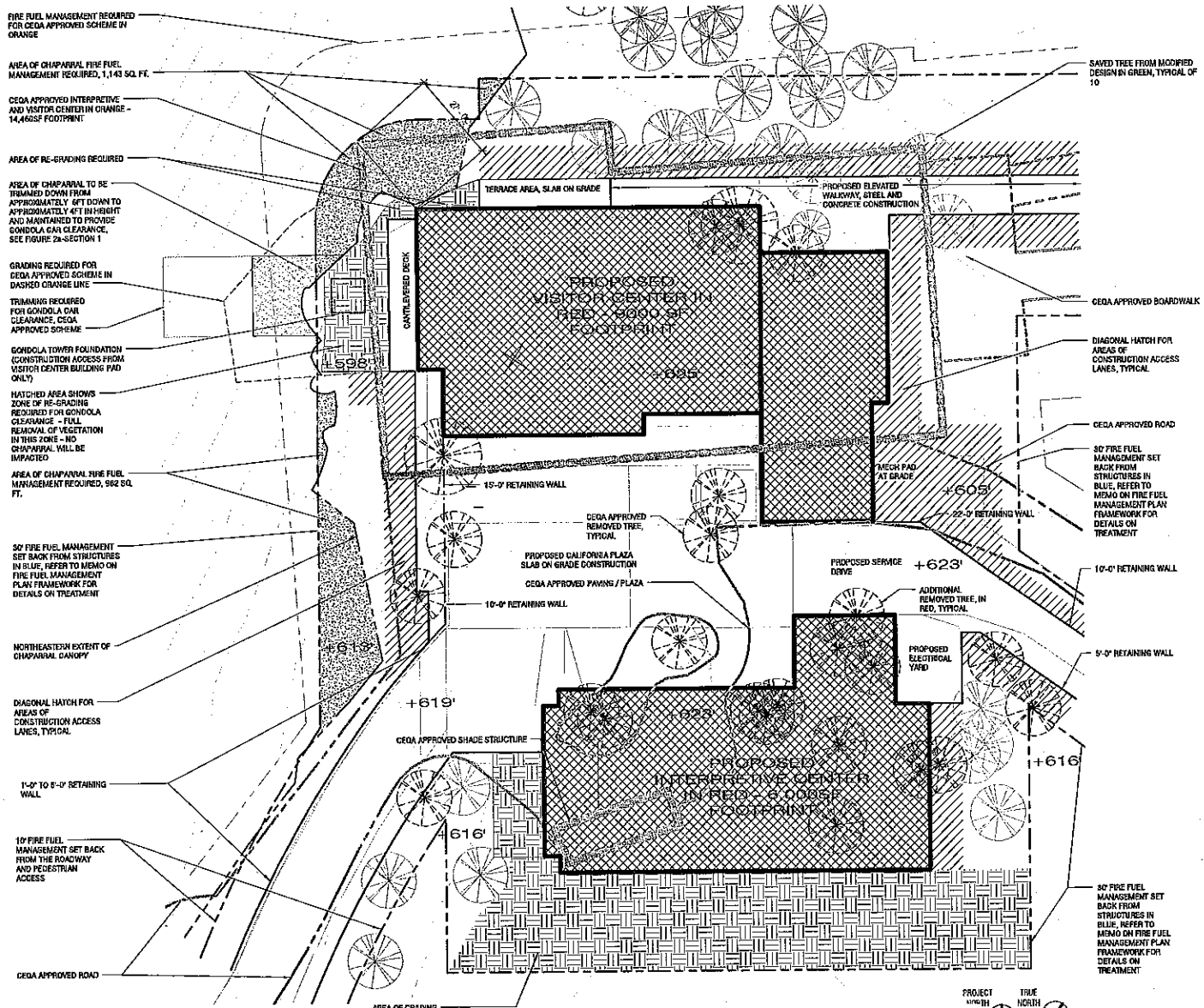
No.	BY	DATE	REVISIONS

MAINTENANCE ACCESS ROAD SECTIONS
CALIFORNIA TRAILS EXHIBIT
KNOWLAND PARK-OAKLAND ZOO

JOB NO. 2090022
SCALE
DATE 10/17/2012
DESIGN
DRAWN
APPROVED

DRAWING NUMBER
FIG 7a
1 of 1



SITE PLAN - FIRE FUEL MANAGEMENT DIAGRAM
1/16" = 1'-0"

Oakland Zoo
CALIFORNIA TRAIL PHASE 1

FIRE FUEL MANAGEMENT PLAN AND DESIGN DEVELOPMENT DIAGRAM

SK-Arch-001
NOVEMBER 2012

noll&tam architects and planners