



Memorandum

To: Mia Blanchett
HGA

From: Jay Dertinger, AIA

CC: Jennifer McMaster

Date: August 1, 2018

Re: Lake Superior Bear Country – VE Options - Architecture and Landscape

Comments:

Dear Mia,

The following itemized list and the attached Redlined Bear Country DD set reflect potential VE cost savings items per our telephone conversations with the Client, Gardner Builders and TJP. The following list and redlines only indicate potential cost savings in relation to the architecture, landscape architecture and exhibit designs. Other VE options related to other disciplines may be considered.

- VE Option 1: Consider not demolishing existing Polar Shores Building - repair roof and seal building for future re-use or redevelopment.
- VE Option 2: Do not demolish existing rockwork surrounding the Polar Shores building.
- VE Option 3: Do not demolish the existing visitor path to the Polar Shores Building entrance.
- VE Option 4: Existing glass view rail on visitor path overlooking cave to remain.
- VE Option 5: Existing glass view rail and concrete curb at cave viewing to remain.
- VE Option 6: Remove 12' high shotcrete wall on west side of existing Polar Shores Building from scope. (Approx. 1,560 SF shotcrete surface)
- VE Option 7: Remove acrylic view bubbles into Cave from scope.
- VE Option 8: Remove new glass view rail and mesh catch net above Cave from scope
- VE Option 9: Reduce surface area (and volume) of shotcrete bear pool
- VE Option 10: Remove perimeter fence from scope of work
- VE Option 11: Remove new shotcrete wall and cave view windows from scope.
- VE Option 12: Reduce area of overhead shotcrete rockwork on cave
- VE Option 13: Remove planting in location of existing holding building

210 third ave. south, suite 2b, seattle, wa 98104
phone [206] 442-9702 fax [206] 405-3305
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W:\16266 - Lake Superior Zoo Bear
Country\Documents\Cost Estimates\PJA - Bear Country
VE Options..docx
Page 1 of 1

VE Option 12 (structural): Reduce amount of structural steel framing associated with reduction of rockwork on cave. See drawing L-110, 1/L-300 and 2/4S-101



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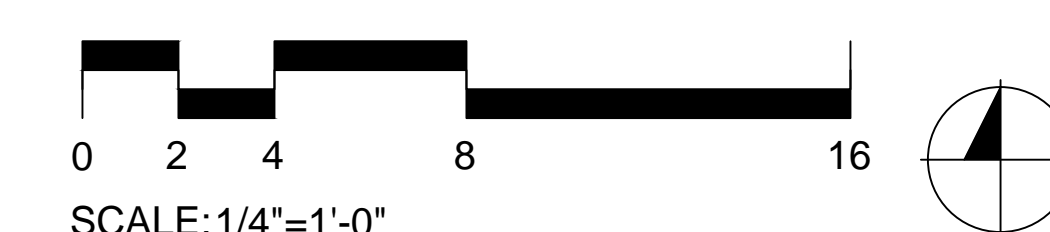
SHEET TITLE

**BROWN BEAR
DEMOLITION PLAN**

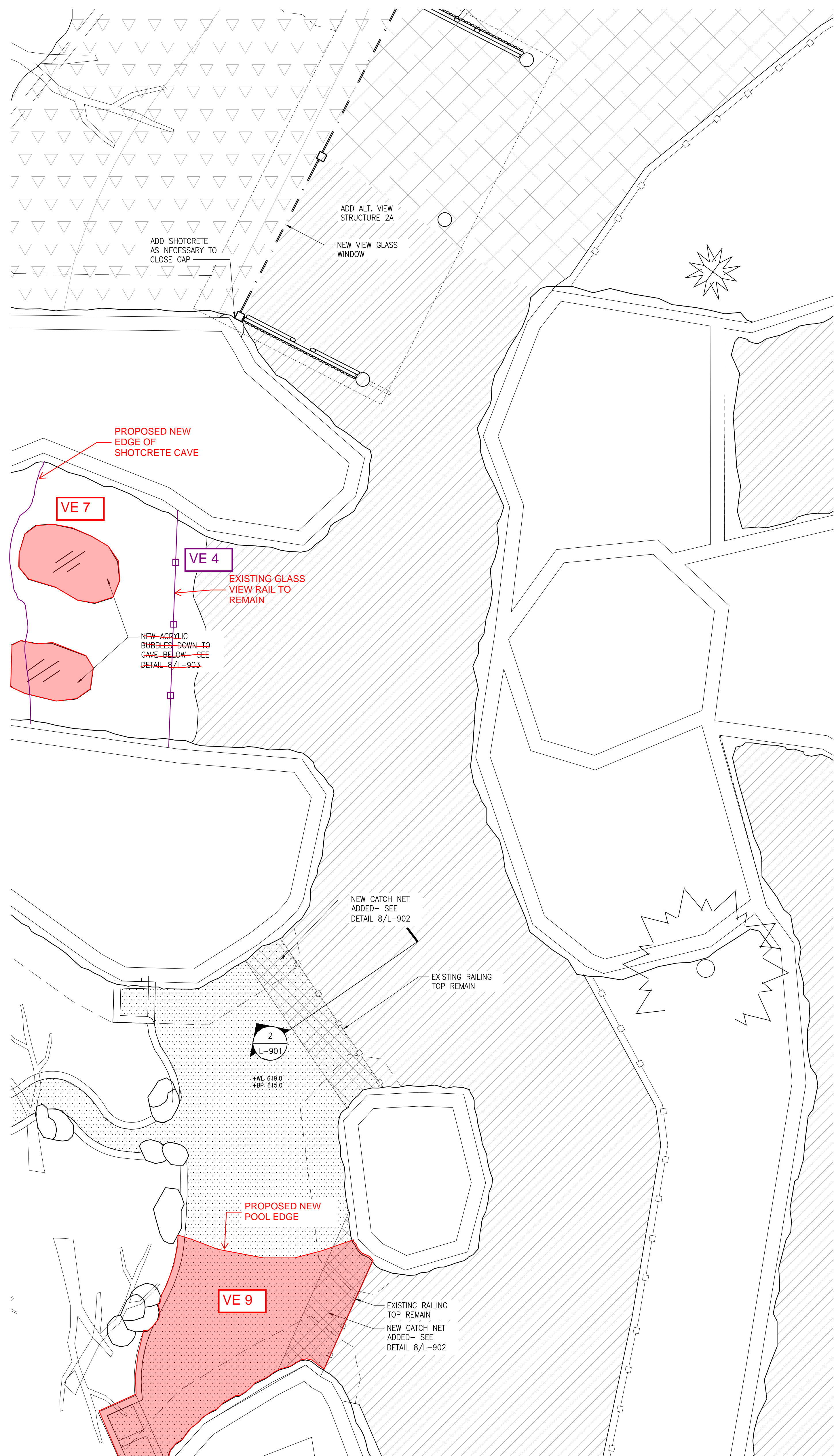
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L-002



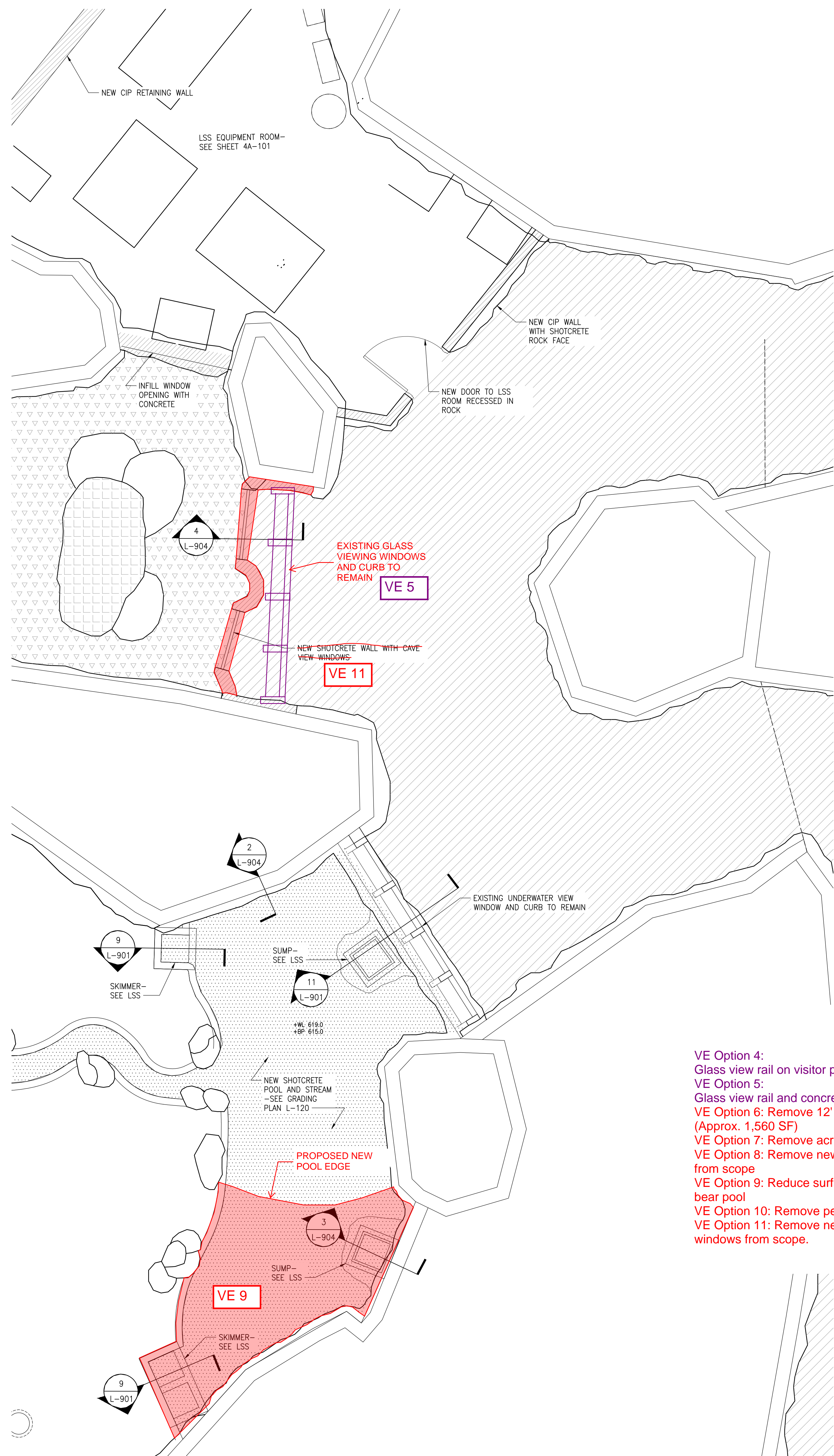


L-003



UPPER LEVEL PLAN
SCALE: 1/4"=1'-0"

2

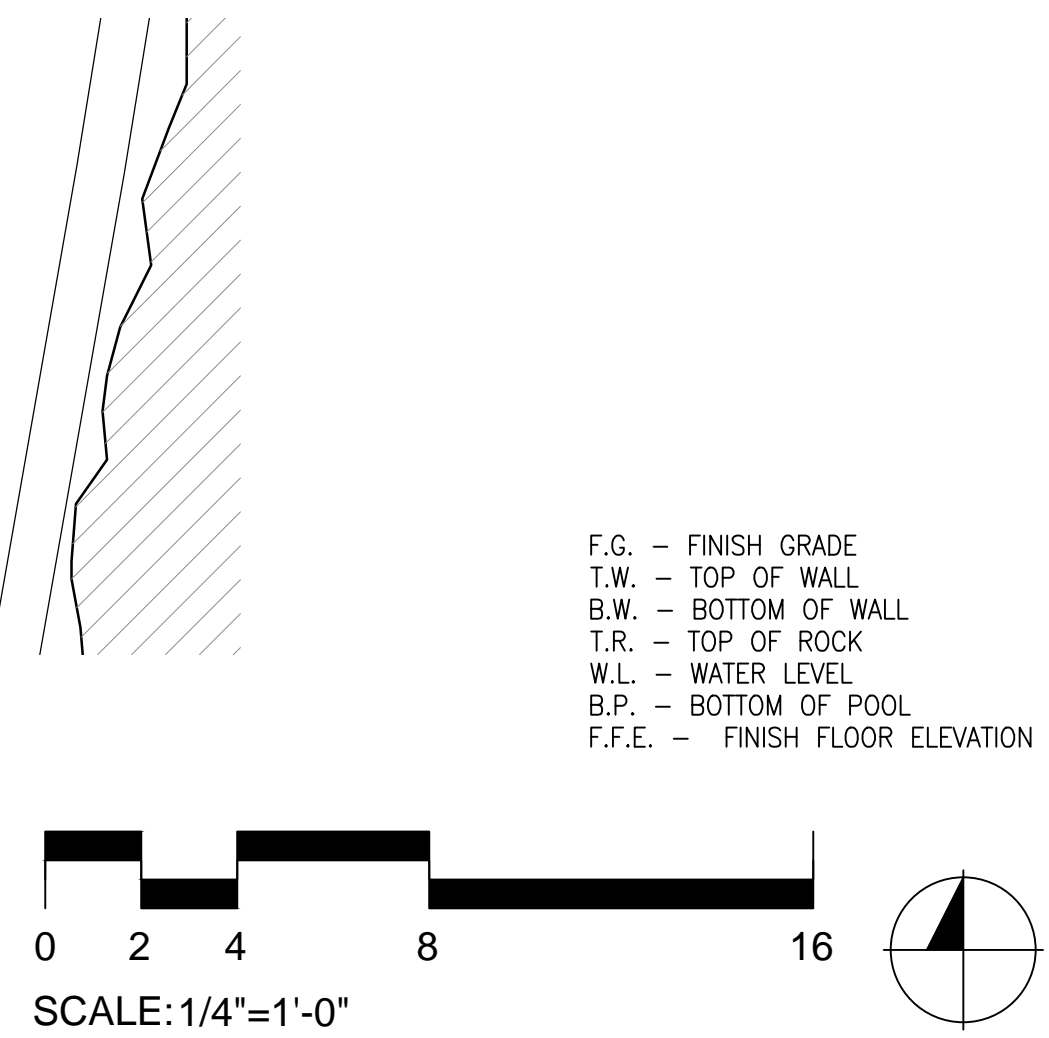


LOWER LEVEL PLAN
SCALE: 1/4"=1'-0"

1

	EXISTING SHOTCRETE WALL TO REMAIN
	NEW CIP WALL
	NEW CIP WALL WITH SHOTCRETE ROCKWORK FACE
	SHOTCRETE ROCK. SEE DETAIL 1/L-901
	HOT ROCK. SEE DETAIL 2/L-901
	NEW VISITOR RAILING-SEE DETAIL 7/L-900
	GATE-SEE DETAIL SHEET L-900
	POOL EDGE-SEE DETAIL 4/L-901
	STANDING DEADFALL TREE-SEE DETAIL 1/L-903
	NATURAL DEADFALL-SEE DETAIL 2/L-903
	SAND/GRAVEL-SEE DETAIL 11/L-901
	EXISTING ASPHALT TO REMAIN
	EXHIBIT POOL
	HORIZONTAL SHOTCRETE SURFACE
	SHOTCRETE ARMORED UTILITY STRUCTURE -SEE DETAIL 7/L-904

- VE Option 4:
Glass view rail on visitor path overlooking cave to remain.
VE Option 5:
Glass view rail and concrete curb at cave viewing to remain.
VE Option 6: Remove 12' high shotcrete wall from scope. (Approx. 1,560 SF)
VE Option 7: Remove acrylic view bubbles from scope.
VE Option 8: Remove new glass view rail and mesh catch net from scope
VE Option 9: Reduce surface area (and volume) of shotcrete bear pool
VE Option 10: Remove perimeter fence from scope of work
VE Option 11: Remove new shotcrete wall and cave view windows from scope.



F.G. - FINISH GRADE
T.W. - TOP OF WALL
B.W. - BOTTOM OF WALL
T.R. - TOP OF ROCK
W.L. - WATER LEVEL
B.P. - BOTTOM OF POOL
F.F.E. - FINISH FLOOR ELEVATION



LAKE SUPERIOR ZOO - BEAR COUNTRY

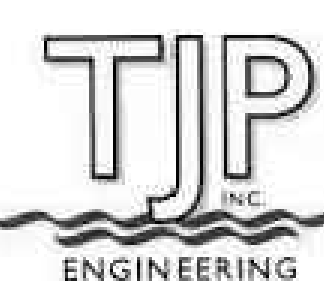
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Minneapolis, Minnesota, USA 55401
P: 612.758.4000
F: 612.758.4159



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P: (619) 423-8700

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SITE PLAN

PROJECT NUMBER 16266	SHEET NUMBER L-102
SCALE NA	
DATE 09/11/2016	



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- VE Option 2: Shotcrete rockwork surrounding existing building to remain.
- VE Option 4: Glass view rail on visitor path overlooking cave to remain.
- VE Option 5: Glass view rail and concrete curb at cave viewing to remain.
- VE Option 6: Remove 12' high shotcrete wall from scope. (Approx. 1,560 SF)
- VE Option 7: Remove acrylic view bubbles from scope.
- VE Option 8: Remove new glass view rail and mesh catch net from scope
- VE Option 9: Reduce surface area (and volume) of shotcrete bear pool
- VE Option 10: Remove perimeter fence from scope of work
- VE Option 11: Remove new shotcrete wall and cave view windows from scope.
- VE Option 12: Reduce area of overhead shotcrete rockwork on cave

1. REFER TO PHOTO REFERENCE FOR SHOTCHOTE THEME.
2. REFER TO L-901 - L-904 FOR SHOTCHOTE DETAILS.
3. ALL EXHIBIT T.W. ELEVATIONS ARE MIN. ELEVATIONS TO MEET BEAR CONTINENT-- SEE ANNUAL BARRIER DIAGRAM 1/L-900. IN SOME INSTANCES EXISTING ROCKWORK MAY BE HIGHER THAN T.W. ELEVATION..
4. REFER TO EXISTING CONDITIONS FOR AVAILABLE EXISTING T.W. ELEVATIONS
5. EXISTING EXHIBIT WALL HEIGHTS TO BE FIELD VERIFIED AND ADDITIONAL ROCKWORK, ADDED AS NEEDED, TO MEET MIN. ANNUAL BARRIER HEIGHT.

PHOTO REFERENCE	SHOTCRETE TYPE
SE-1	STREAM EDGE
PE-1	POOL EDGE
RK-1	ROCKS
RK-2	ROCKS (TALL)
RK-3	ROCK (FLAT)
BW-1	BARRIER WALL
WF-1	WATERFALL

F.G. - FINISH GRADE
T.W. - TOP OF WALL
B.W. - BOTTOM OF WALL
T.R. - TOP OF ROCK
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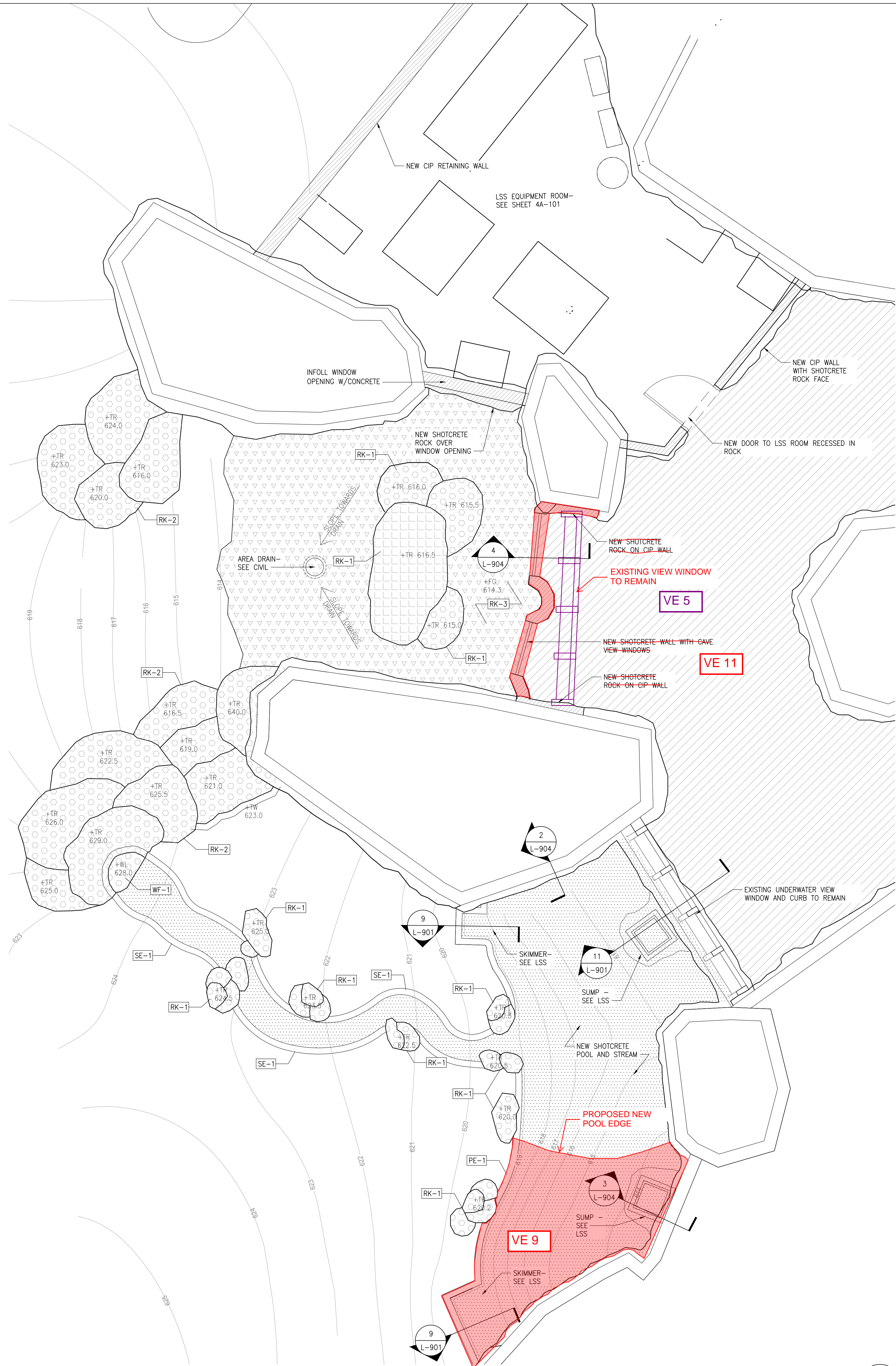
SHOTCRETE PLAN

SHEET NUMBER

L-110

DATE
09/1/2016

VE Option 5: Glass view rail and concrete curb at cave viewing to remain.
VE Option 9: Reduce surface area (and volume) of shotcrete bear pool
VE Option 11: Remove new shotcrete wall and cave view windows from scope.



LOWER LEVEL SHOTCRETE PLAN
SCALE: 1/4"=1'-0"

LEGEND	
	EXISTING SHOTCRETE WALL TO REMAIN
	EXISTING SHOTCRETE WALL - ADDED ROCK TO MEET OVERHANG. SEE DETAIL 5/L-902
	NEW FULL-HEIGHT SHOTCRETE WALL. SEE DETAIL 2/L-902
	SHOTCRETE ADDED TO TOP OF WALL TO MEET BARRIER REQ. SEE DETAIL 3/L-902
	NEW RETAINING WALL
	NEW CIP WALL WITH SHOTCRETE ROCKWORK FACE
	EXISTING BUILDING WALL TO REMAIN
	SHOTCRETE ROCK. SEE DETAIL 1/L-901
	HOT ROCK. SEE DETAIL 2/L-901
	POOL EDGE - SEE DETAIL 4/L-901
	HORIZONTAL SURFACE SHOTCRETE
	EXHIBIT POOL
	PROPOSED CONTOUR
	SHOTCRETE ARMORED UTILITY STRUCTURE - SEE DETAIL 7/L-904

SHOTCRETE SCHEDULE

PHOTO REFERENCE	SHOTCRETE TYPE
SE-1	STREAM EDGE
PE-1	POOL EDGE
RK-1	ROCKS
RK-2	ROCKS (TALL)
RK-3	ROCK (FLAT)
BW-1	BARRIER WALL
WF-1	WATERFALL

NOTES

- REFER TO PHOTO REFERENCE FOR SHOTCRETE THEME.
- REFER TO L-901 - L-904 FOR SHOTCRETE DETAILS.
- ALL EXHIBIT T.W. ELEVATIONS ARE MIN. ELEVATIONS TO MEET BEAR CONTAINMENT - SEE ANIMAL BARRIER DIAGRAM 1/L-900. IN SOME INSTANCES EXISTING ROCKWORK MAY BE HIGHER THAN T.W. ELEVATION.
- REFER TO EXISTING CONDITIONS FOR AVAILABLE EXISTING T.W. ELEVATIONS.
- EXISTING EXHIBIT WALL HEIGHTS TO BE FIELD VERIFIED AND ADDITIONAL ROCKWORK ADDED AS NEEDED TO MEET MIN. ANIMAL BARRIER HEIGHT.

F.G. - FINISH GRADE
T.W. - TOP OF WALL
B.W. - BOTTOM OF WALL
T.R. - TOP OF ROCK
W.L. - WATER LEVEL
B.P. - BOTTOM OF POOL
F.F.E. - FINISH FLOOR ELEVATION



LAKE SUPERIOR ZOO - BEAR COUNTRY

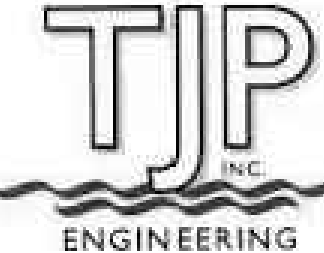
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Minneapolis, Minnesota, USA 55401
P: 612.758.4000
F: 612.758.4159



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Imperial Beach, CA 91932
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SHOTCRETE PLAN

PROJECT NUMBER	16266	SHEET NUMBER
SCALE	NA	L-111
DATE	09/1/2016	



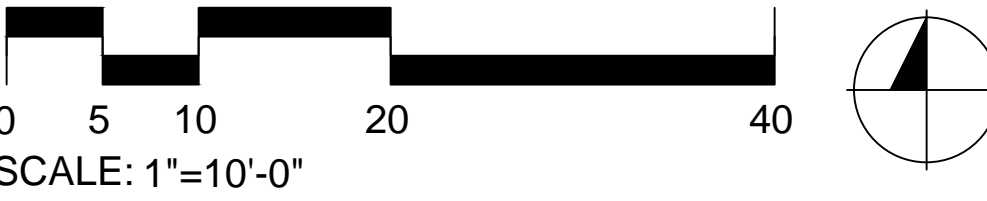
LEGEND	
	CONIFEROUS EVERGREEN TREE
	DECIDUOUS SPECIMEN TREE
	MIXED DECIDUOUS SHRUBS @ 5' O.C. IN TRIANGULAR GRID
	CLUMP GRASSES @ 1' O.C. IN TRIANGULAR GRID
	SOD FESCUE BLEND
	GROUNDCOVER @ 1' O.C. IN TRIANGULAR GRID
	EXISTING TREES
	TREE TO BE REMOVED

VE Option 13: Remove planting in location of existing holding building

PLANTING SCHEDULE

QTY	ABV	SCIENTIFIC NAME	COMMON NAME	SIZE	NOTES
TREE (CONIFEROUS)					
2	PR	Pinus resinosa	Red Pine	2" Caliper	
2	PS	Pinus strobus	Eastern White Pine	2" Caliper	
2	TO	Thuja occidentalis	Northern White Pine	2" Caliper	
TREE (DECIDUOUS)					
1	AR	Acer rubrum	Red Maple	2" Caliper	
2	BP	Betula alleghaniensis	Yellow Birch	2" Caliper	
SHRUBS					
25%	AM	Aronia melanocarpa	Black Chokeberry	3 Gal.	
25%	CS	Cornus sericea	Redosier Dogwood	3 Gal.	
25%	DI	Diervilla spp.	Bush Honeysuckle	3 Gal.	
25%	IV	Ilex verticillata	Winterberry	3 Gal.	
GROUND COVER					
25%	CC	Cornus canadensis	Bunchberry	3.5" Pot	
25%	AF	Athyrium filix-femina	Lady Fern	3.5" Pot	
25%	CP	Comptonia peregrina	Sweet Fern	3.5" Pot	
25%	AN	Aralia nudicaulis	Wild Sarsaparilla	3.5" Pot	
GRASSES					
40%	KG	Koeleria glauca	Blue Hair Grass	1 Gal.	
20%	MS	Miscanthus sinensis	Flame Grass	1 Gal.	
40%	PV	Panicum virgatum	Switch Grass	1 Gal.	
SOD					
			Mixed fescue sod		

- NOTES:
1. SOD ALL EXHIBITS
2. MULCH ALL PLANTING AREAS
- F.G. - FINISH GRADE
T.W. - TOP OF WALL
B.W. - BOTTOM OF WALL
T.R. - TOP OF ROCK
W.L. - WATER LEVEL
B.P. - BOTTOM OF POOL
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LAKE SUPERIOR ZOO - BEAR COUNTRY

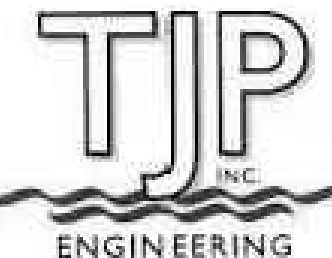
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F: 612.758.4199



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SHEET TITLE

PLANTING PLAN

PROJECT NUMBER

16266

SHEET NUMBER

L-200

SCALE

1"=10'-0"

DATE

09/1/2016

LAKE SUPERIOR ZOO - BEAR COUNTRY

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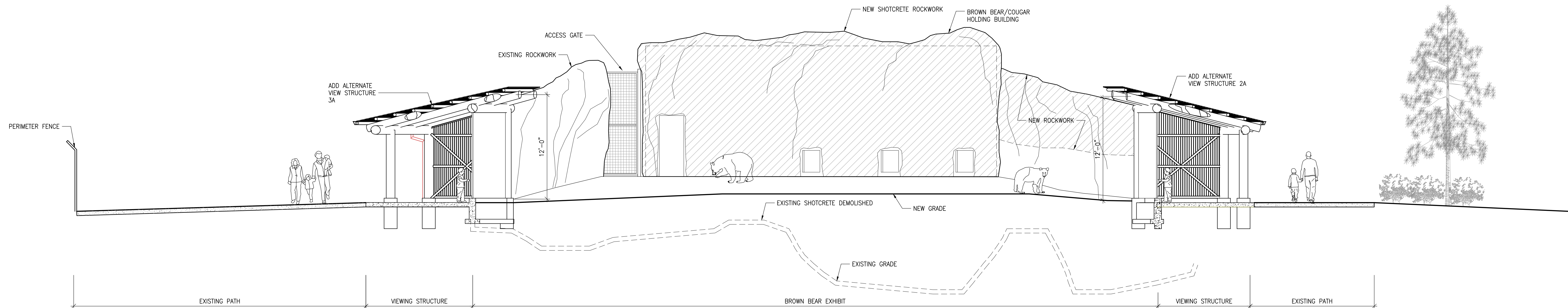
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P: 612.758.4000
F: 612.758.4199

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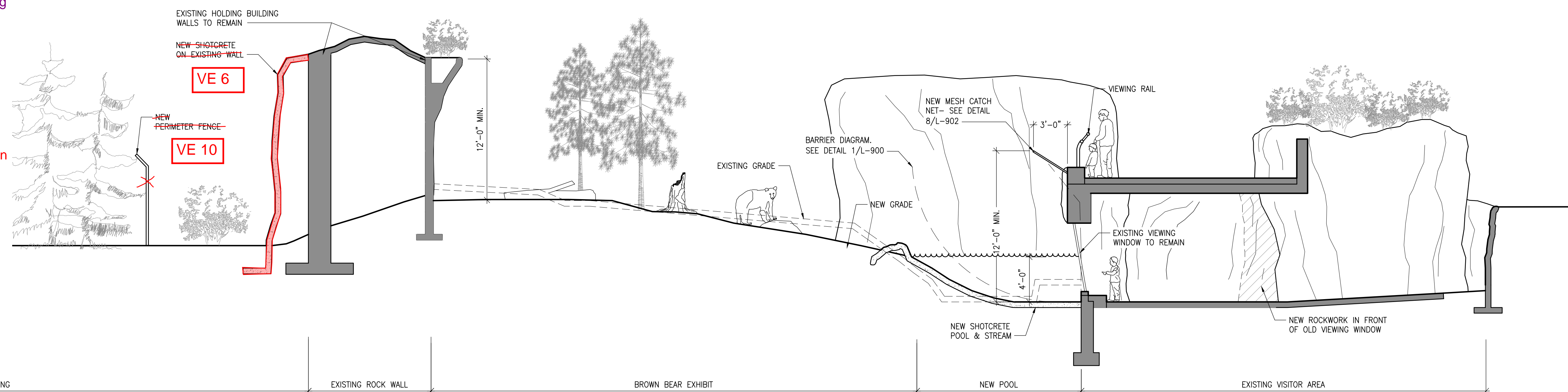


VIEWING STRUCTURES SECTION

SCALE: 3/16"=1'-0"

3

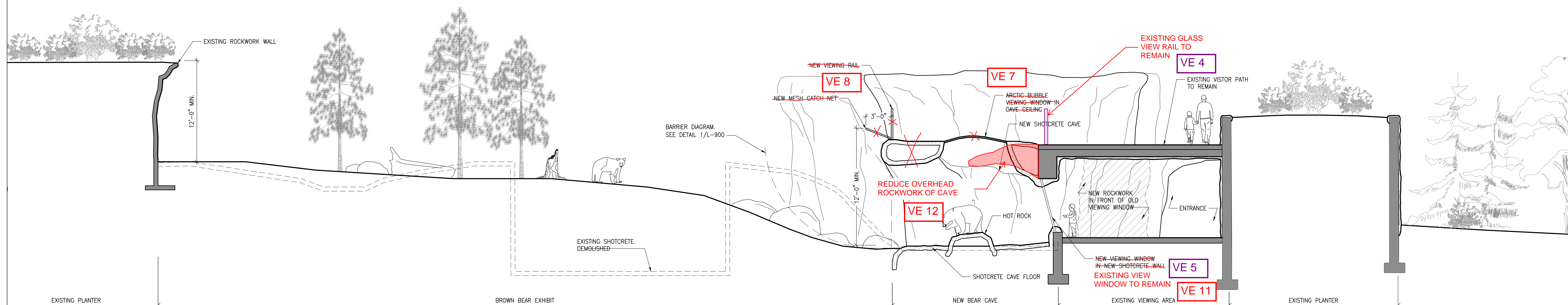
- VE Option 4: Glass view rail on visitor path overlooking cave to remain.
- VE Option 5: Glass view rail and concrete curb at cave viewing to remain.
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- VE Option 12: Reduce area of overhead shotcrete rockwork on cave



UNDERWATER VIEWING SECTION

SCALE: 3/16"=1'-0"

2



BEAR CAVE SECTION

SCALE: 3/16"=1'-0"

1

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SECTIONS

PROJECT NUMBER

16266

SCALE

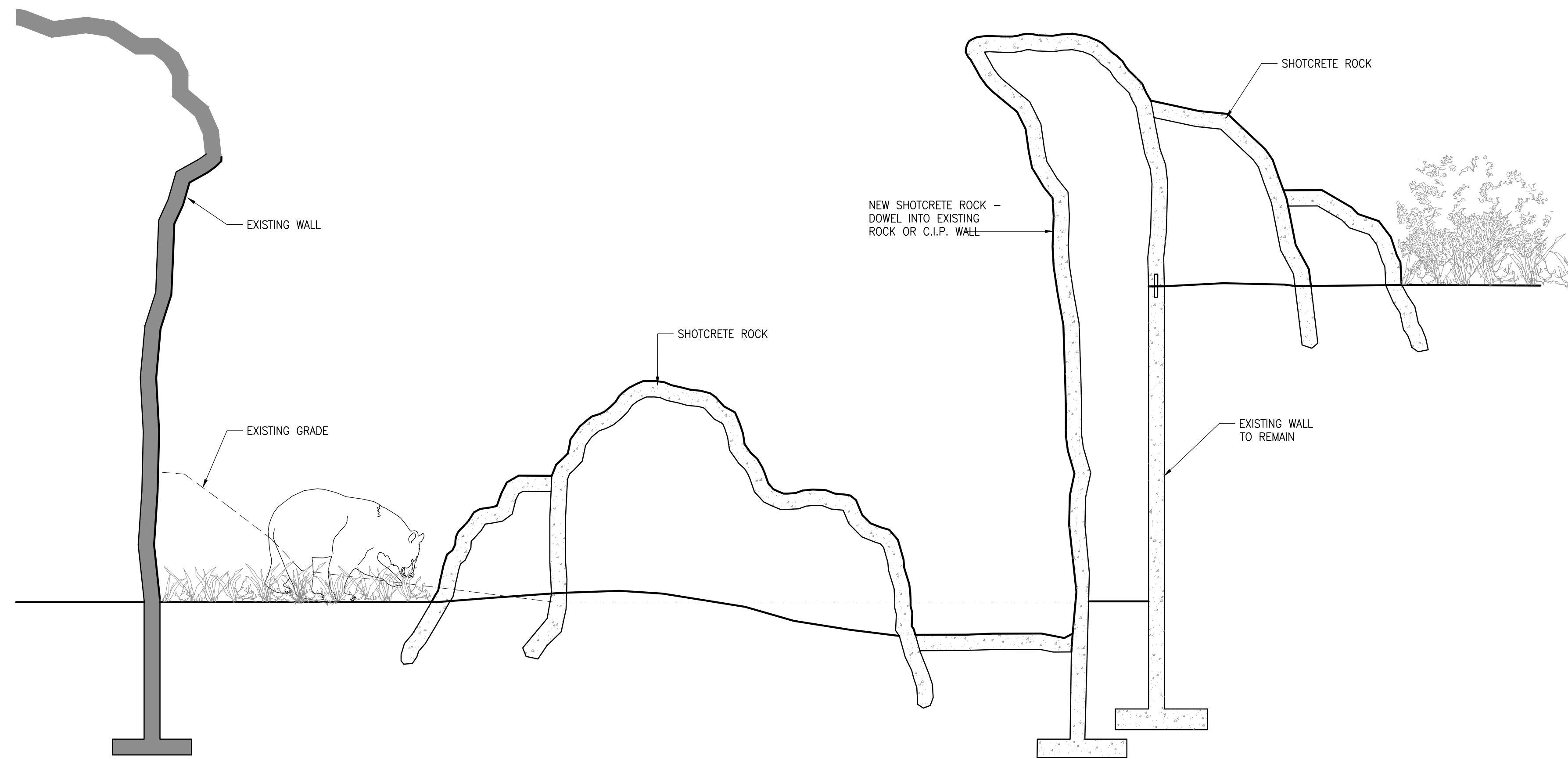
SHEET NUMBER

L-300

DATE

09/1/2016

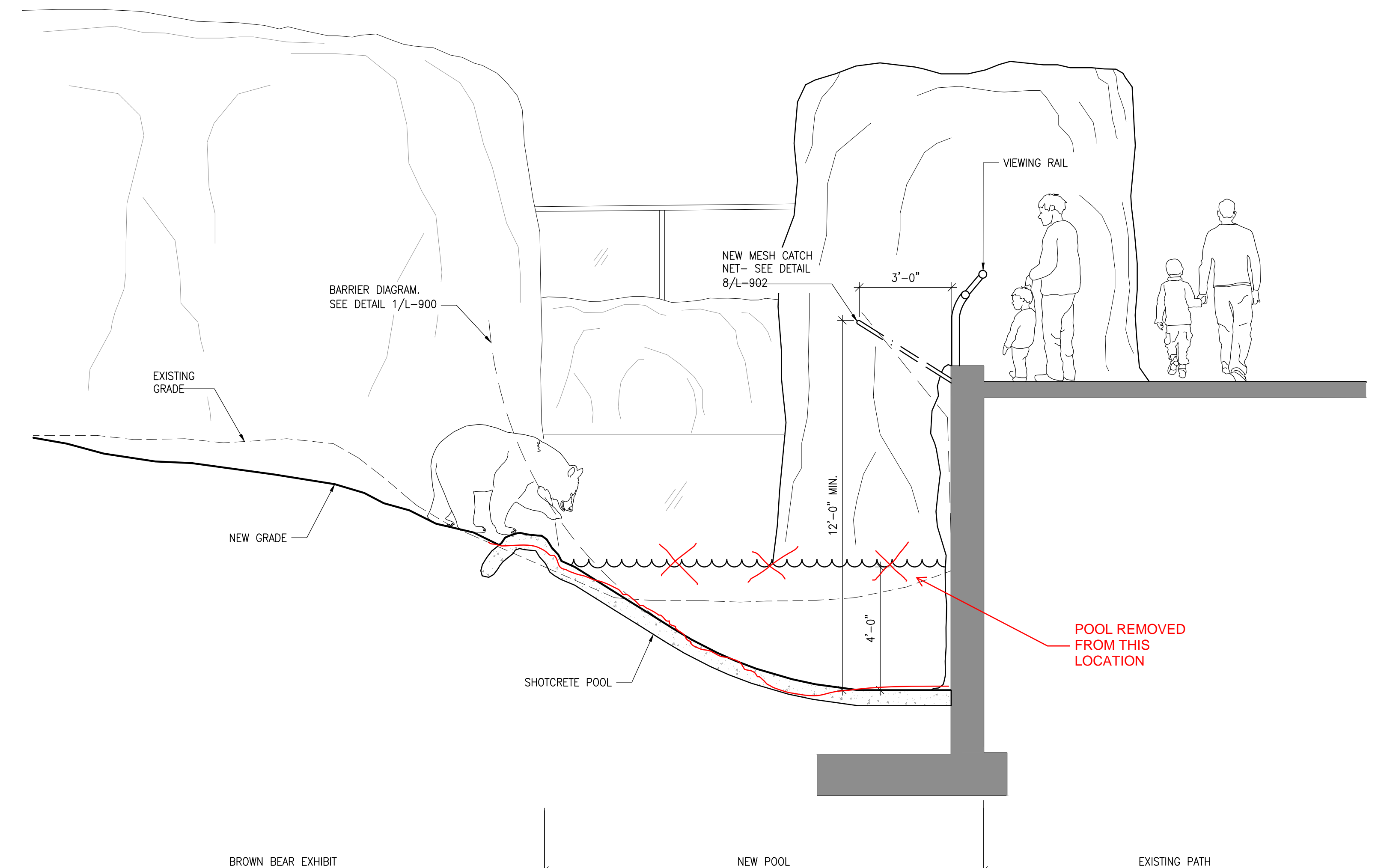
PROJ. SHEET SIZE: 31" x 36"



BEAR EXHIBIT SECTION

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

4

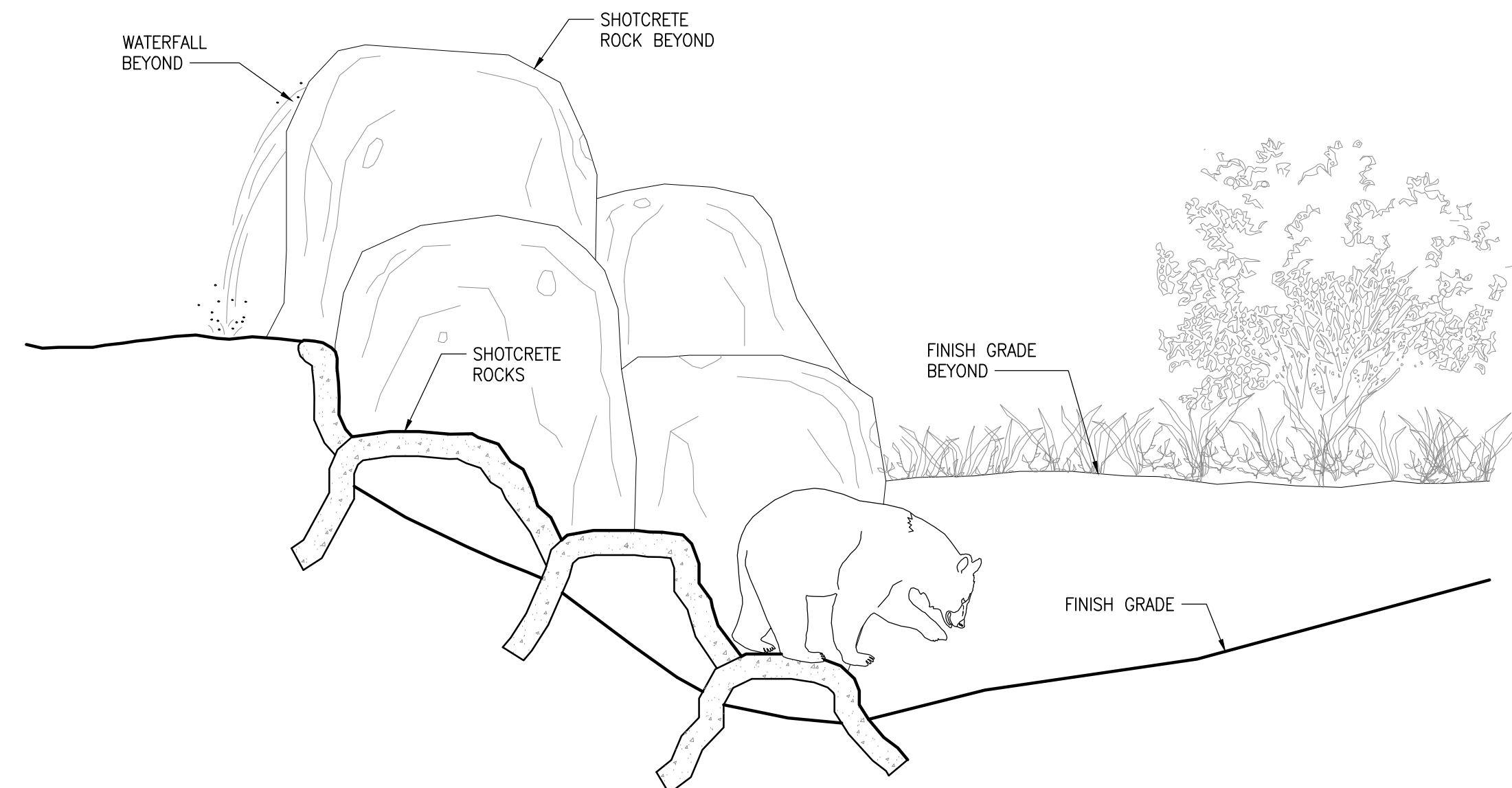


BEAR POOL VIEWING RAILING SECTION

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

2

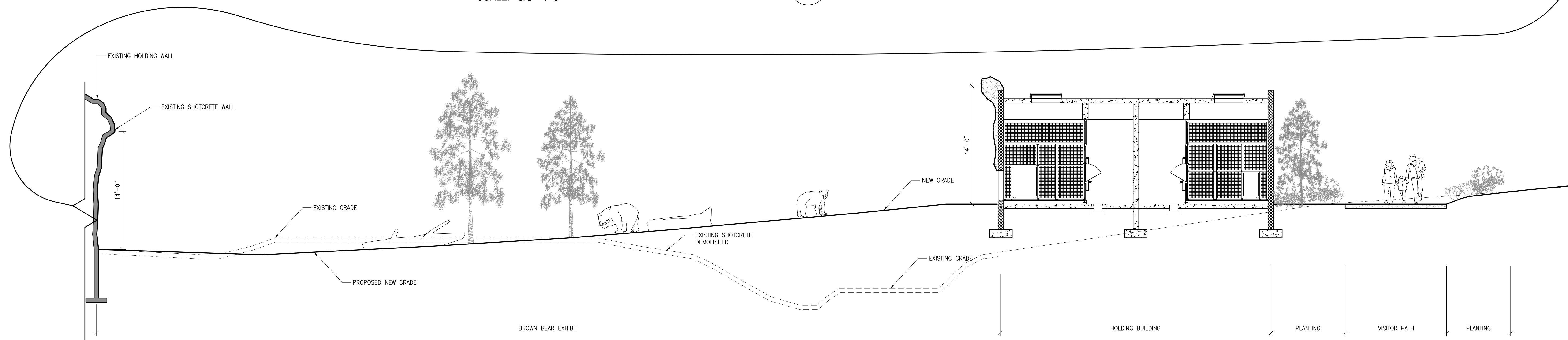
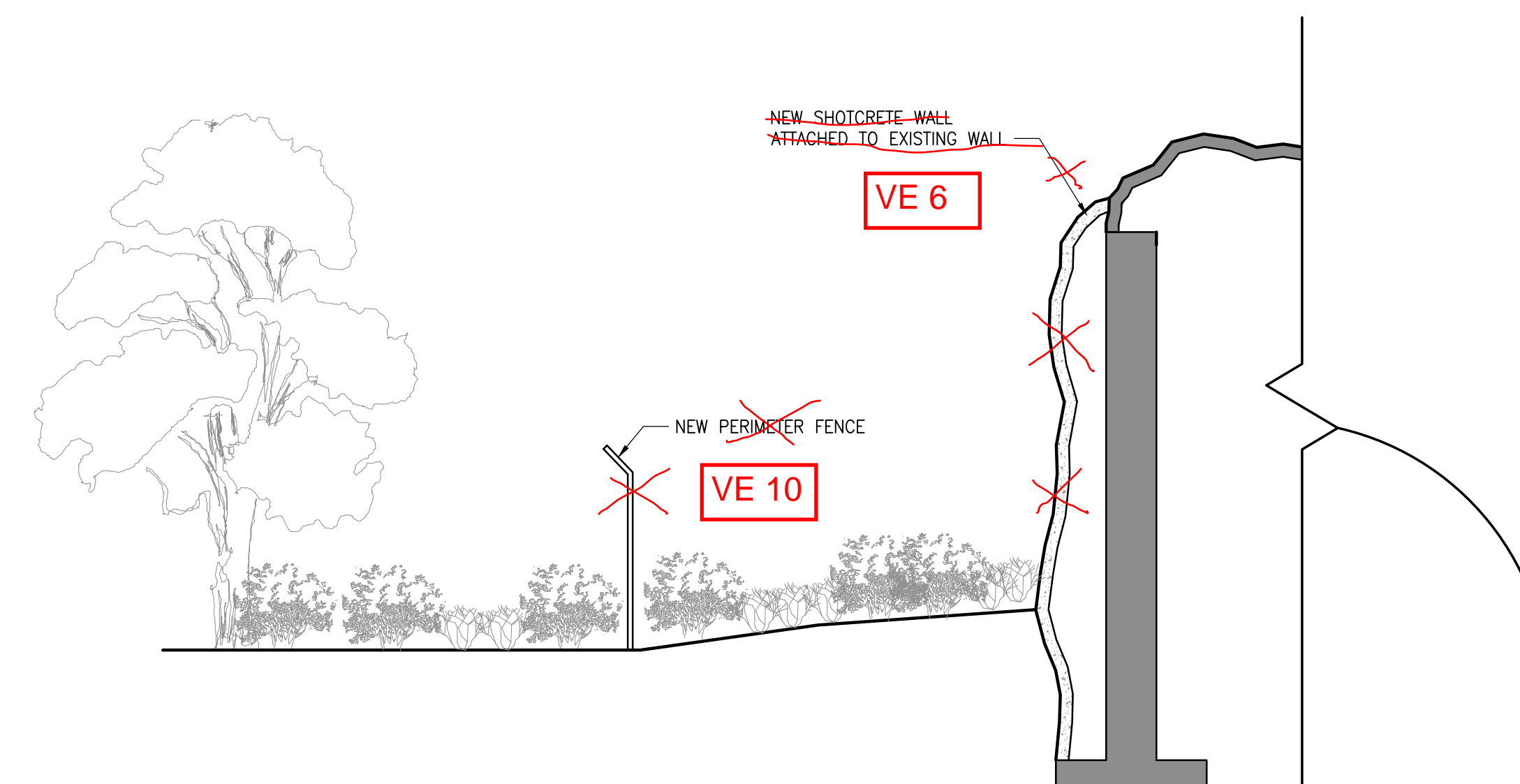
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BEAR EXHIBIT ROCK STEPS SECTION

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

3



BEAR / FUTURE EXHIBIT SECTION

SCALE: 3/16"=1'-0"

1

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SHEET TITLE	
SECTIONS	
PROJECT NUMBER	16266
SCALE	
DATE	09/1/2016
SHEET NUMBER	L-301