

ADVENTURE PEAK EPIC DISCOVERY ACTIVITIES

HEAVENLY MOUNTAIN RESORT
EL DORADO COUNTY, CALIFORNIA

APN 030-030-01

DOUGLAS COUNTY, NEVADA

APN 1318-00-002-010

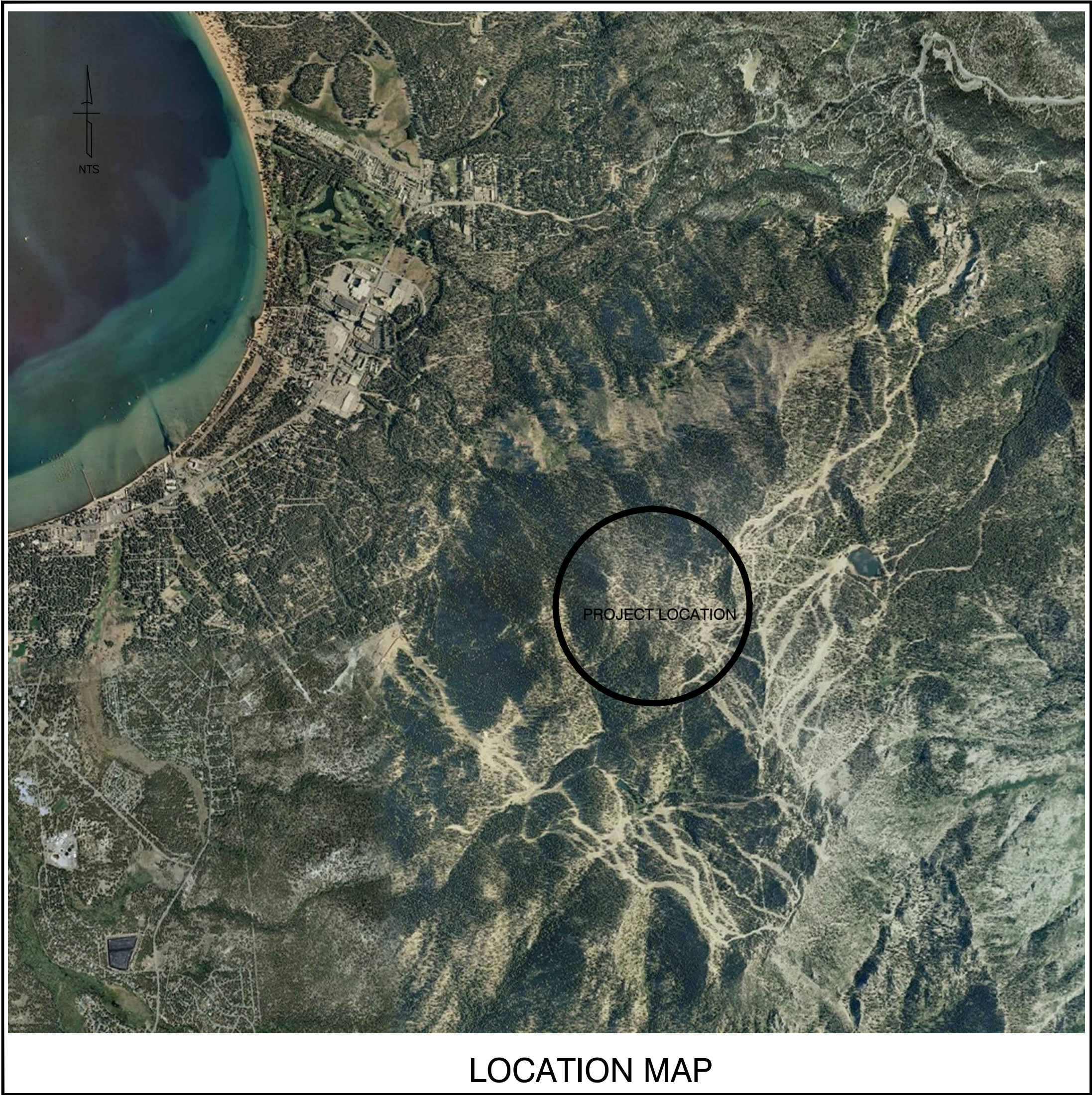
STANDARD ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE	I.E.	INVERT ELEVATION
@	AT	IMPROV.	IMPROVEMENT
AGG.	AGGREGATE	L.F.	LINEAR FEET
APPROX.	APPROXIMATE	M.H.	MANHOLE
BLDG.	BUILDING	MAX.	MAXIMUM
BLVD	BOULEVARD	MIN.	MINIMUM
BM	BENCH MARK	MON.	MONUMENT
C.B.	CATCH BASIN	NTS	NOT TO SCALE
C & G	CURB AND GUTTER	O.G.	ORIGINAL GROUND
CL	CENTERLINE	P.C.C.	PORTLAND CONCRETE CEMENT
CMP	CORRUGATED METAL PIPE	PE	POLYETHYLENE
CO	CLEAN OUT	PL	PROPERTY LINE
CONC.	CONCRETE	PP	POWER POLE
CULV.	CULVERT	RCP	REINFORCED CONCRETE PIPE
C.Y.	CUBIC YARDS	S.F.	SQUARE FEET
D.I.	DROP INLET	SD	STORM DRAIN
DIA.	DIAMETER	SDMH	STORM DRAIN MANHOLE
DR	DRIVE	SHT.	SHEET
E	ELECTRIC	SS	SANITARY SEWER
EL., ELEV.	ELEVATION	SSCO	SANITARY SEWER CLEANOUT
EXIST., EX.	EXISTING	SSMH	SANITARY SEWER MANHOLE
FG	FINISH GRADE	STD.	STANDARD
F.H.	FIRE HYDRANT	TELE.	TELEPHONE
FL	FLOWLINE	TYP.	TYPICAL
FND.	FOUND	UTIL.	UTILITY
G	GAS	W	WATER

Project Coverage Table (Rev. 2014-2-27)			
New Coverage	Existing 1a	Proposed 1a	Net Change
<i>Adventure Peak Epic Discoveries</i>			
Alpine Coaster Forest Flyer			
Buildings (Terminal, bull wheels, attendant's shed)		3,170	3,170
Coaster		1,256	1,256
Paths		810	810
Parking		432	432
Sky Cycle			
Structures		1,511	1,511
Paths and Queuing Areas		13,339	13,339
Maintenance Road		4,898	4,898
Mid Station Canopy Tour			
Paths and Queuing Areas		11,538	11,538
Structures		80	80
In-fill Activities			
Paths		3,938	3,938
Mountain Bike Skills Park		15,182	15,182
Concrete Pad for Bike Rental Area		2,000	2,000
<i>Total Adventure Peak Epic Discoveries</i>	-	58,154	58,154

Coverage Summary Table			
Maximum Allowable Coverage (per Master Plan)	1a	1b	Total
Maximum Allowable Coverage per Master Plan			2,053,854
Balance Remaining of Coverage and Banked Coverage per Table 3.4-4 of the Final EIR/EIS/EIS ¹	434,580	4,464	439,044
Project Subtotals			
Northbow/Olympic Express Lifts Project Balances	960	396	1,356
Gondola Hiking trails	54,501	0	54,501
Mid Station Road	50,469	0	50,469
Northbow/Olympic Express Lifts - Plan Revision	216	0	216
World Cup/East Bowl Snowmaking - Plan Revision	283	0	283
Calif. Base Surface Lift Replacement	1,572	0	1,572
Skyline Trail Grading and Snowmaking	1,134	0	1,134
Top of the Gondola Lodge	42,387	0	42,387
Adjusted Gondola Permit Coverage	-27,519	0	-27,519
Umbrella Bar Relocation	651	0	651
Covered Surface Lift and Snowmaking	10,039	0	10,039
California Side Trail Widening	0	0	0
Adventure Peak Improvements	6,207	0	6,207
Zipline Adventure Ride	4,916	0	4,916
Verizon Angel's Roost Cell Tower and Back-up Bldg	584	0	584
Epic Race Course Electrical	0	0	0
Summer Activities	22,213	0	22,213
Tamarack Lodge Modifications	537	0	537
<i>Adventure Peak Epic Discoveries</i>	58,154	0	58,154
<i>Removal of Gondola Hiking Trails</i>	-54,501	0	-54,501
<i>East Peak Basin Epic Discoveries</i>	1,210	0	1,210
<i>Sky Meadows Basin Epic Discoveries</i>	26,816	772	27,588
Subtotals	200,829	1,168	201,997
Balance Remaining Upon Project Completion	233,751	3,296	237,047

1. Includes 10,541 square feet of existing coverage attributed to Sky Deck



OWNER

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FOREST FLYER

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MID STATION CANOPY TOUR

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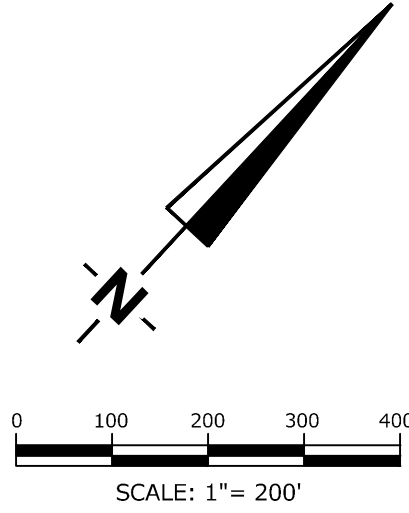
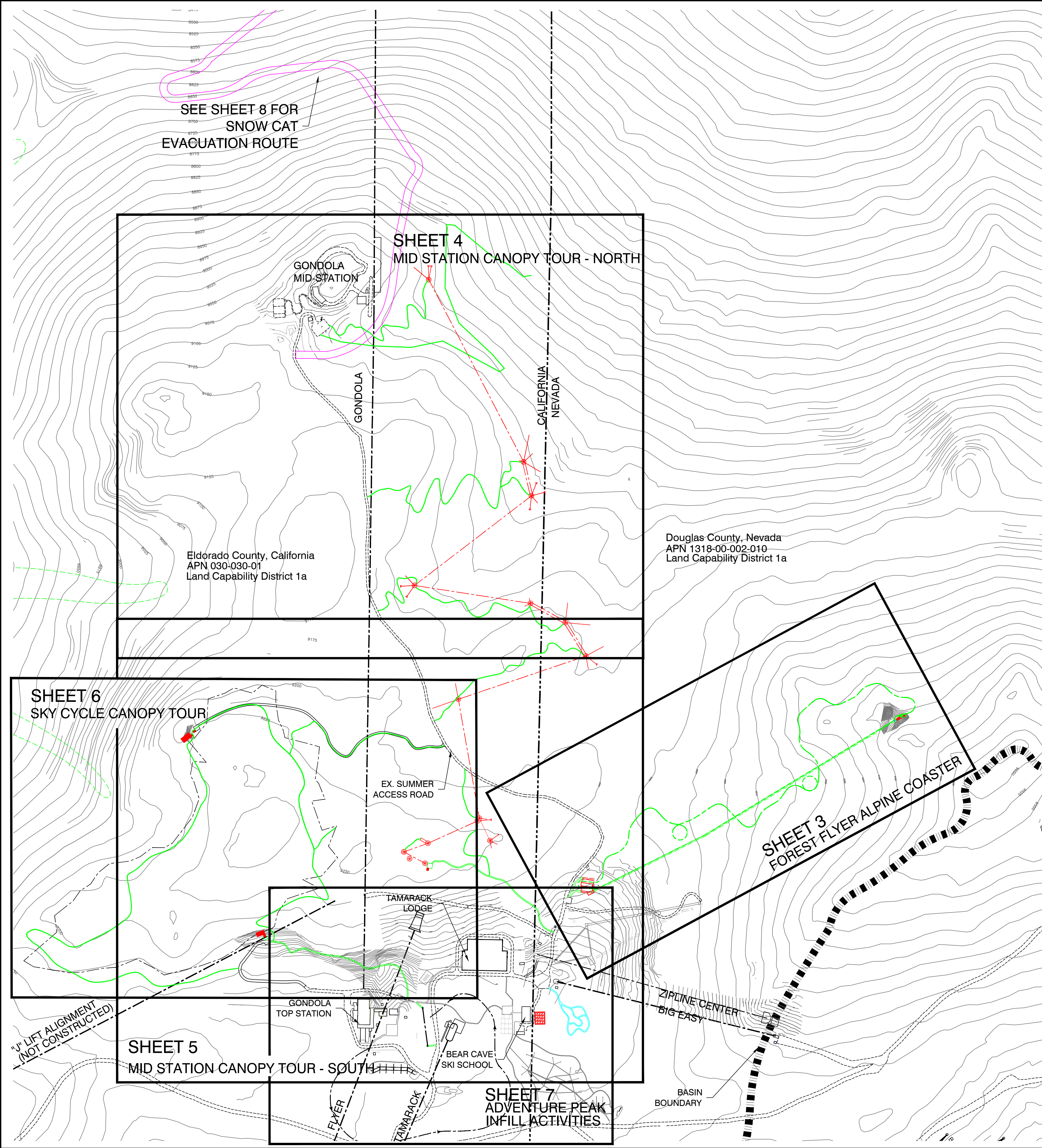
DATE	REVISION

HEAVENLY MOUNTAIN RESORT
Adventure Peak Epic Discovery Activities

TITLE SHEET

JOB NO.:	12-602.7
DATE:	02-27-14
DESIGNED:	MMG
DRAWN :	MLM/FRB
CHECKED:	MMG

SHEET 1



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HEAVENLY MOUNTAIN RESORT
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SITE PLAN AND SHEET INDEX

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SHEET 2

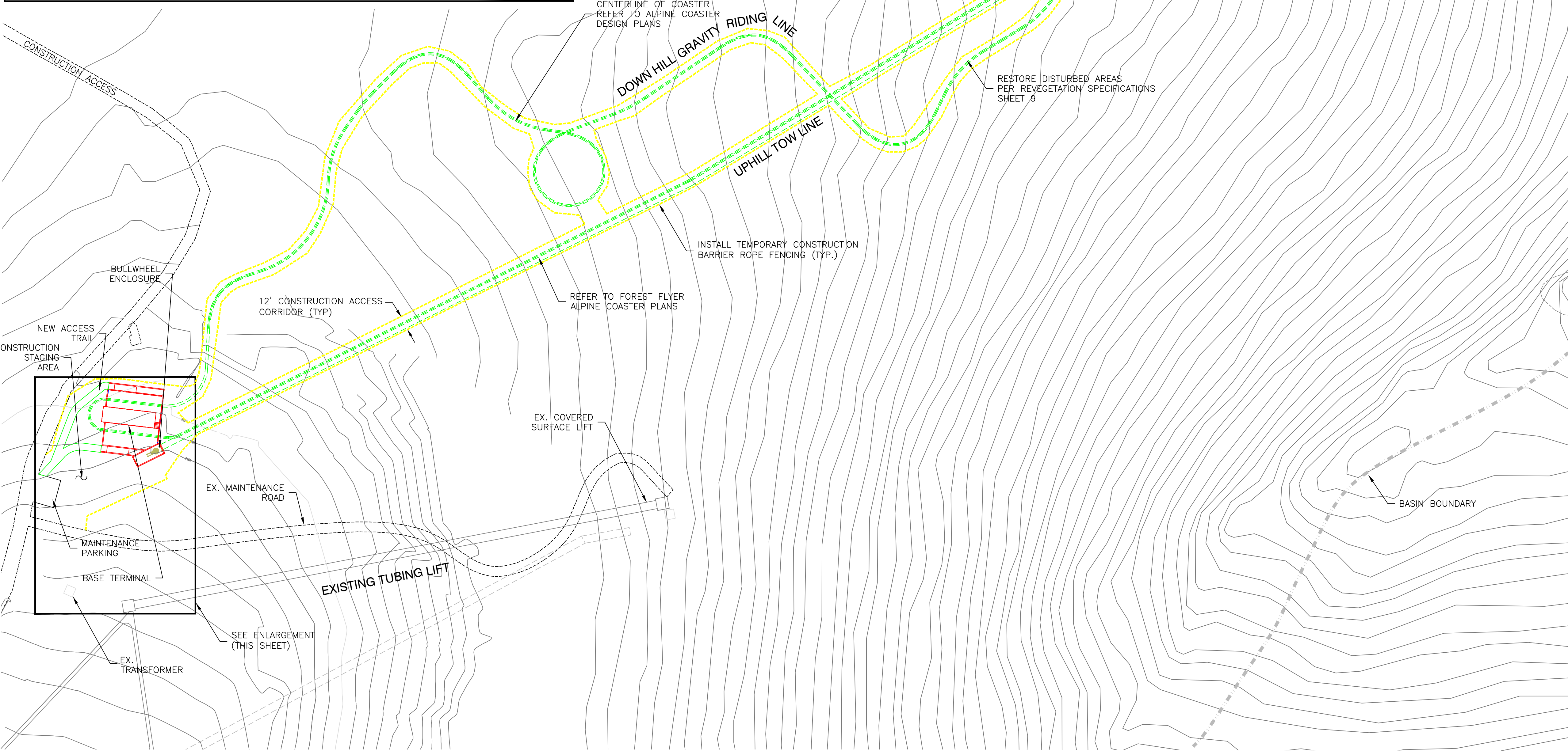
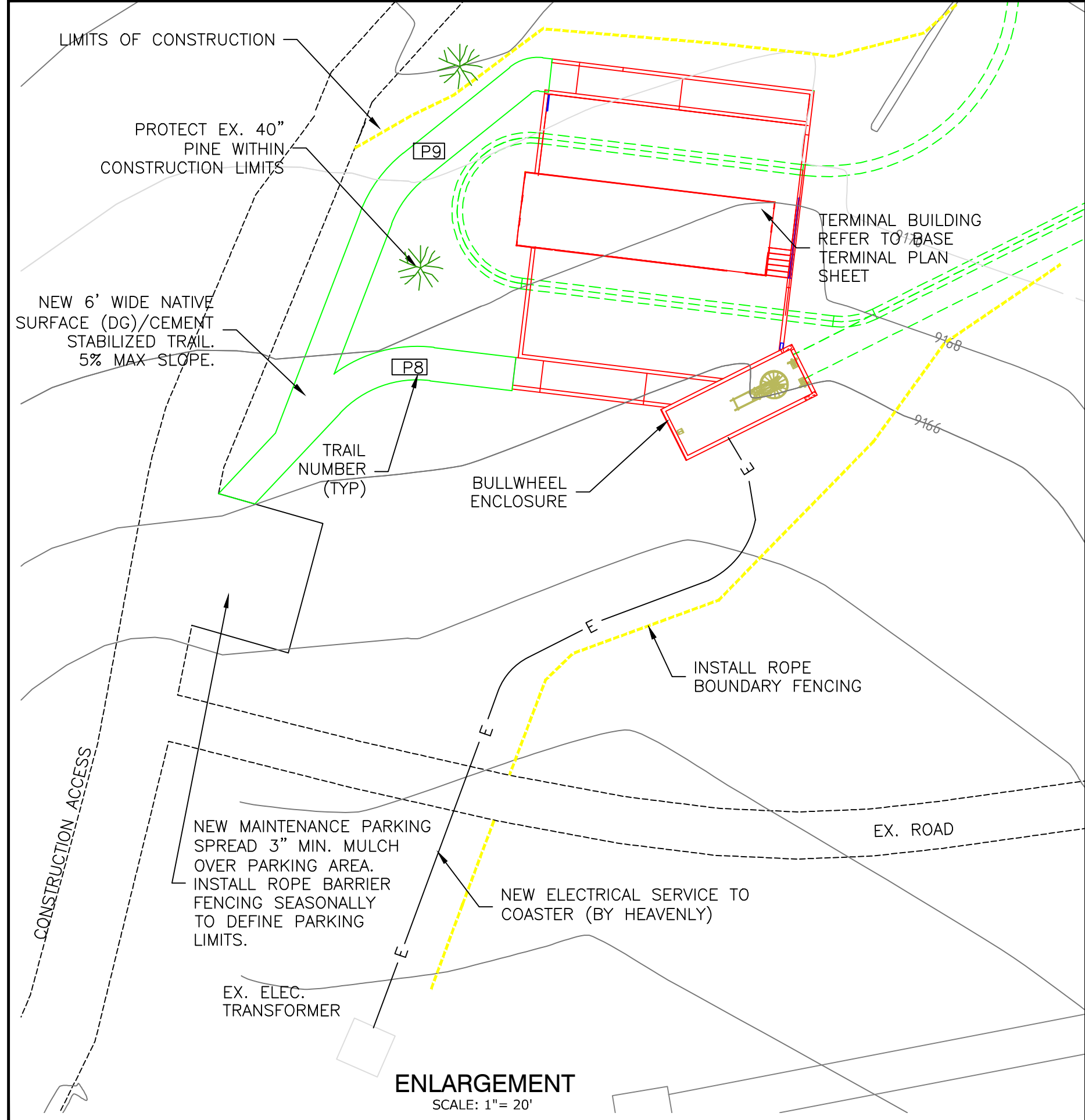
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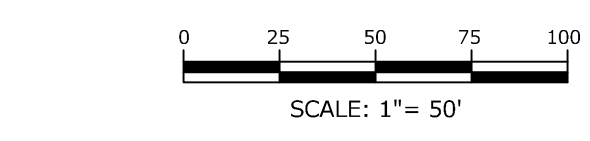
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SHEET 2	



ALL TREES WITHIN 6' EITHER SIDE OF CENTERLINE OF COASTER (12' TOTAL WIDTH) TO BE REMOVED (TYP.) ESTIMATED TREE REMOVAL AREA IS 0.66 ACRES



LEGEND:

- P2 PUBLIC HIKING TRAILS
- M2 ADMINISTRATIVE MAINTENANCE TRAILS

NOTES:

- ALL TRAILS SHALL BE AT GRADE, NATIVE MATERIAL TRAILS THAT ARE FIELD FIT TO MINIMIZE REMOVAL OF VEGETATION AND UTILIZE THE NATURAL TOPOGRAPHY TO MINIMIZE THE GRADES.
- STACKED SWITCHBACKS SHALL BE MINIMIZED TO THE EXTENT POSSIBLE.
- FORMER ROADWAY PRISMS SHALL BE UTILIZED WHERE PRACTICABLE FOR NEW TRAIL ALIGNMENTS.
- ALL TRAIL CONSTRUCTION CORRIDORS OUTSIDE OF THE TRAIL ITSELF SHALL BE REVEGETATED PER THE REVEGETATION SPECIFICATIONS INCLUDED IN THESE PLANS.

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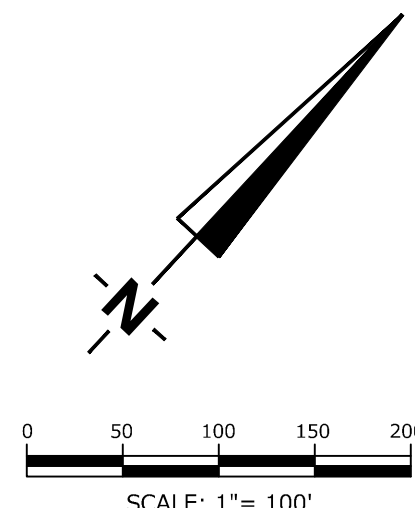
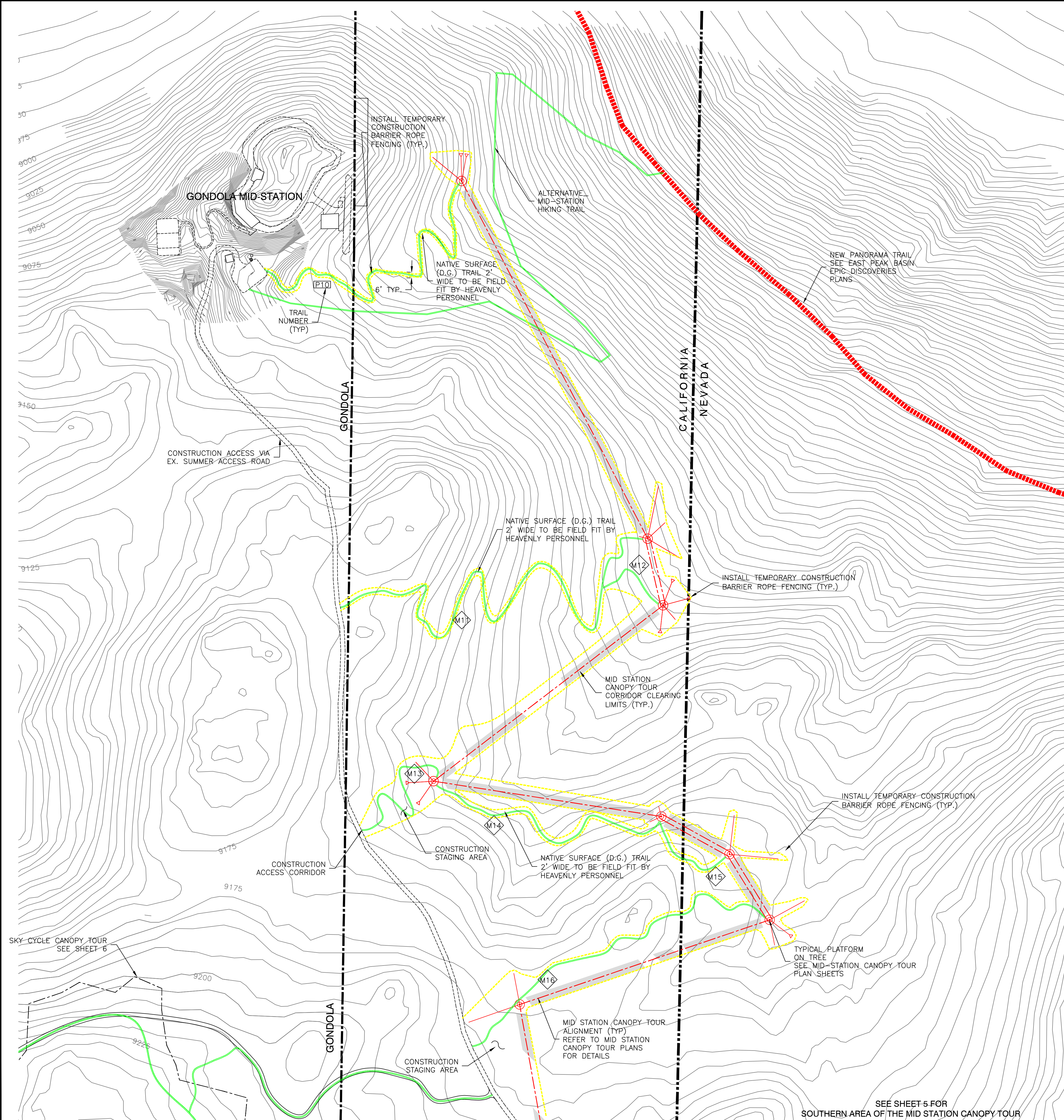
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HEAVENLY MOUNTAIN RESORT Adventure Peak Epic Discovery Activities	FOREST FLYER ALPINE COASTER
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SHEET 3

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LEGEND:

- PUBLIC HIKING TRAILS
- ADMINISTRATIVE MAINTENANCE TRAILS
- MID STATION CANOPY TOUR CORRIDOR CLEARING LIMITS (TYP.)
TOTAL ESTIMATED CLEARING: 1.4 ACRES

NOTES:

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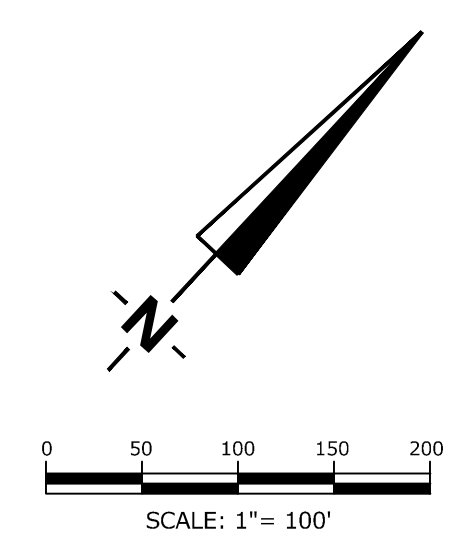
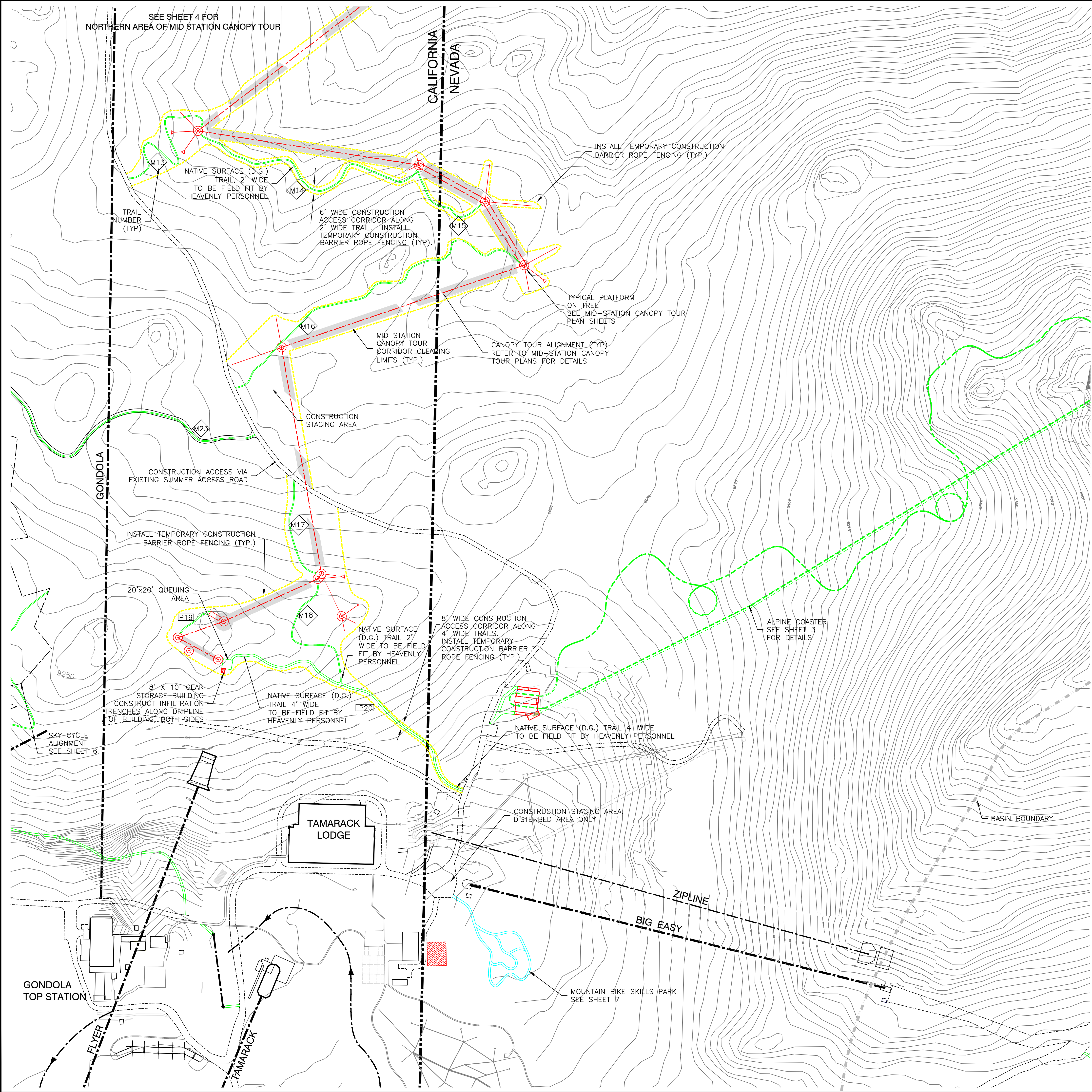
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HEAVENLY MOUNTAIN RESORT Adventure Peak Epic Discovery Activities	MID STATION CANOPY TOUR - NORTH
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LEGEND:

- PUBLIC HIKING TRAILS
- ADMINISTRATIVE MAINTENANCE TRAILS
- MID STATION CANOPY TOUR CORRIDOR
CLEARING LIMITS (TYP)
TOTAL ESTIMATED CLEARING: 1.4 ACRES

NOTES:

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MID STATION ZIPLINE TOUR

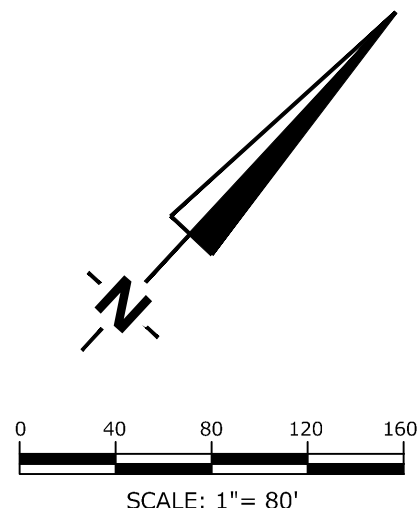
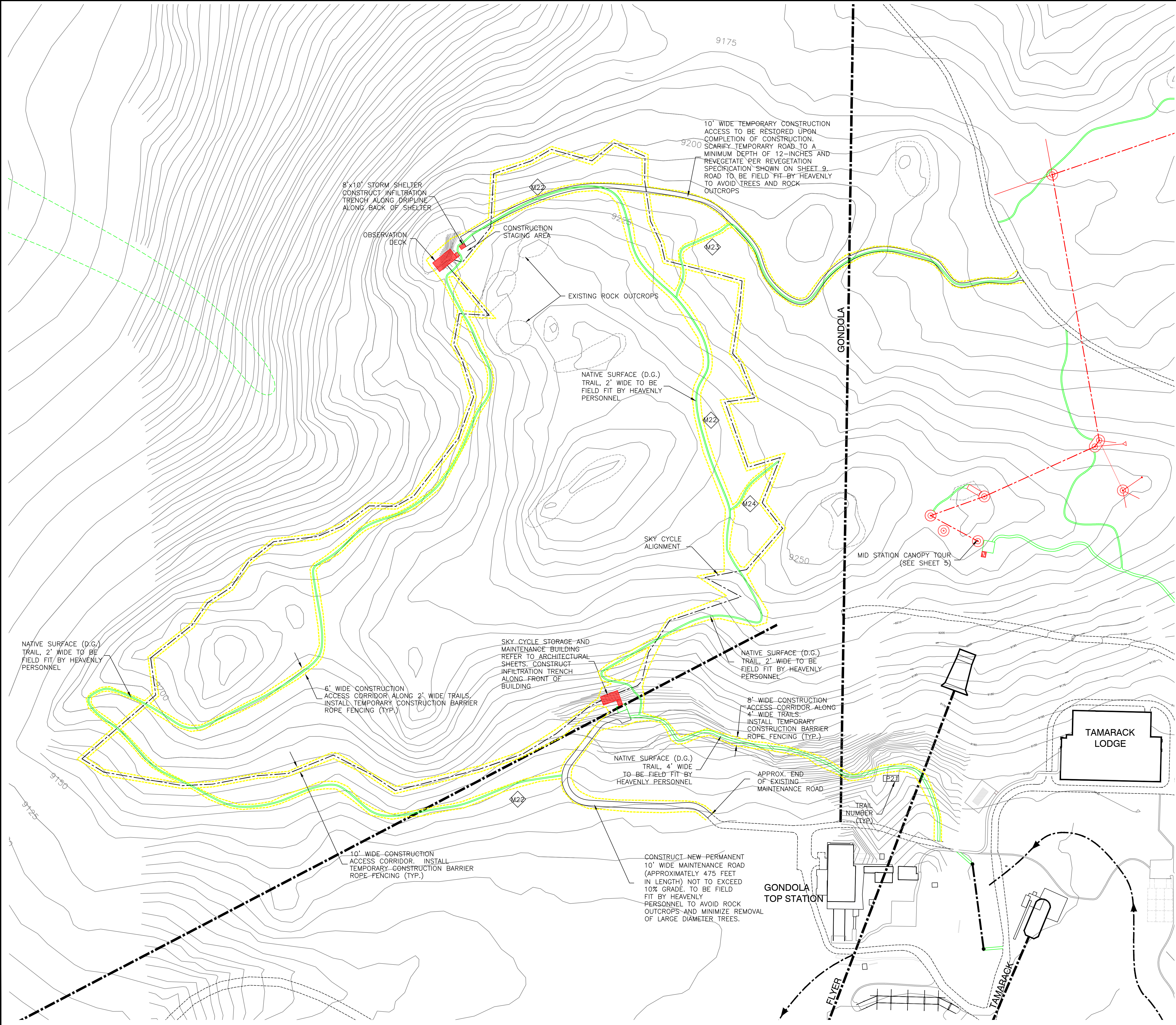
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SHEET 5

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- ADMINISTRATIVE MAINTENANCE TRAILS

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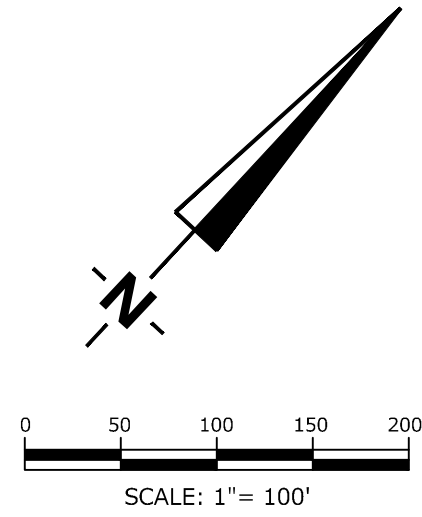
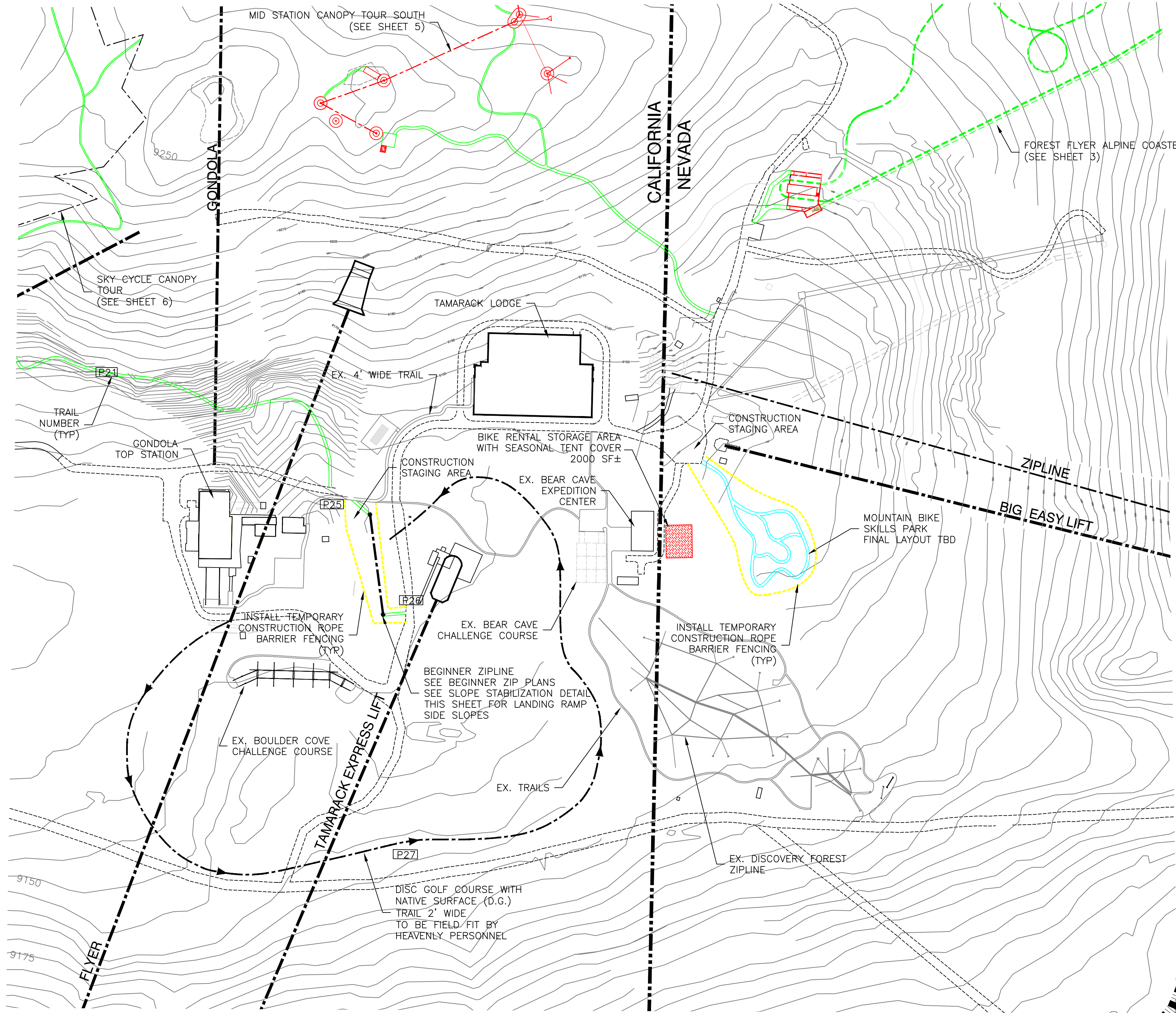
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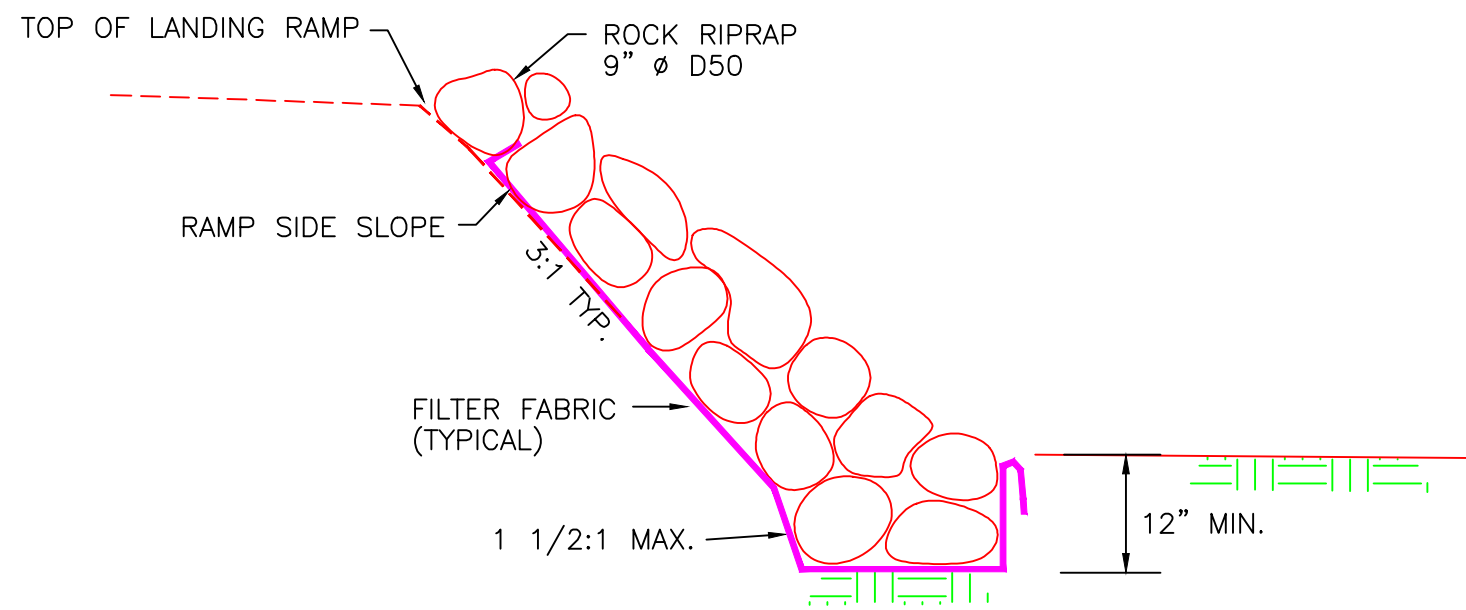


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SLOPE STABILIZATION
KIDDIE ZIP LANDING RAMP SIDE SLOPES
NOT TO SCALE

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HEAVENLY MOUNTAIN RESORT
Adventure Peak Epic Discovery Activities

ADVENTURE PEAK INFILL ACTIVITIES

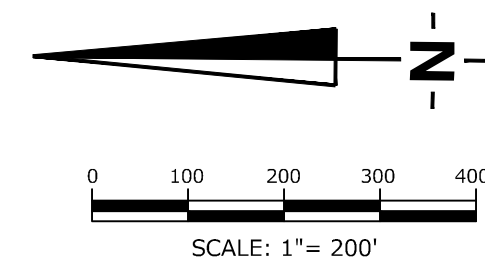
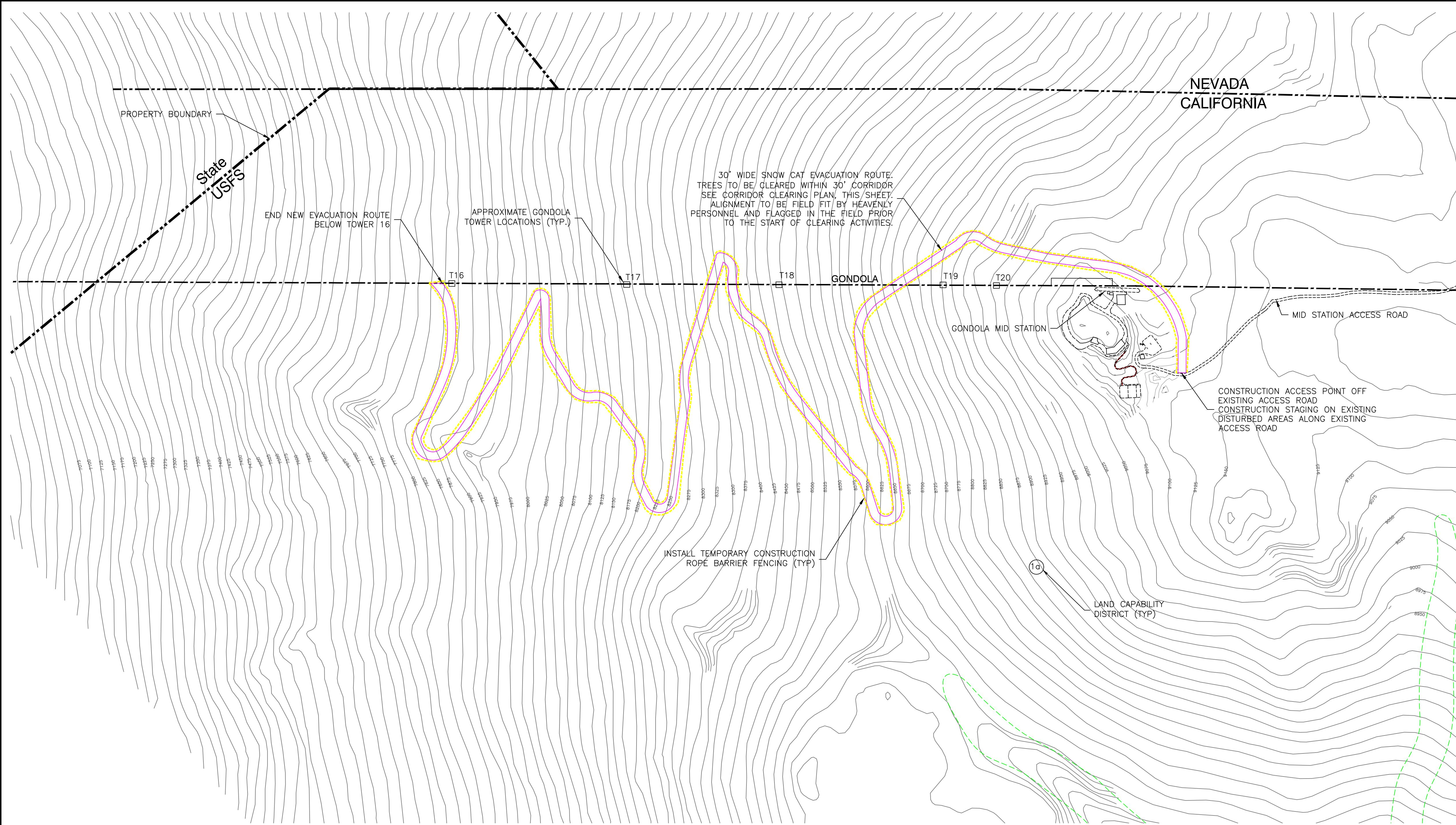
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CORRIDOR CLEARING PLAN

- PROJECT PRESCRIPTIONS**
The following prescriptions will be implemented. A combination of prescriptions, outlined below, will be field-verified by Heavenly representatives and those of other agencies.
 - Prescription 1: Protect Native Plants and Revegetate**
 - Existing native shrubs along the proposed evacuation route will be field identified and avoided to the greatest extent possible.
 - Prescription 2: Remove Noxious Weeds**
 - Noxious weeds shall be flagged by a qualified Heavenly representative or consultant, isolated from project activity, and reported to the Lake Tahoe Basin Management Unit's (LTBMU) Ecosystem Conservation Department for formal taxonomic identification and removal activity scheduling.
 - Prescription 3: Construction Techniques**
 - The optimum pieces of equipment given the site conditions shall be used to minimize unwanted environmental effects. Typically, the work will be completed using hand tools and/or a spider hoe.
 - All mechanical construction equipment used shall be limited to the 30-foot wide evacuation route corridor.
 - All areas disturbed due to equipment movement shall be scarified and mulched with with a pine needle mulch incorporated into the top two inches of soil.
 - Prescription 3: Chip Existing Felled Trees and Large Woody Debris (less than 10 inches)**
 - All existing limbs shall be either chipped and spread evenly or scattered where the maximum height does not exceed 12 to 18 inches.
 - Existing felled trees shall be chipped and the resulting mulch evenly distributed to an average depth of three inches.
 - Prescription 4: Treat Existing Large Diameter Logs (greater than 10 inches)**
Large diameter logs cannot be mechanically chipped and will be treated separately as described below:
 - Existing large diameter logs shall be removed from the corridor.
 - Logs shall be placed in adjacent forested areas off the designated corridor to mimic natural surroundings.
 - Logs along steeper sections will be mechanically placed perpendicular to the slope where needed to reduce soil erosion hazards.
 - Prescription 5: Grind Existing Tree Stumps**
 - Stumps shall not be removed and soil disturbance will not occur.
 - Stumps shall be cut or ground to less than 6 inches in height from the soil surface whenever safety possible.
 - Existing rounds shall be removed in order to provide a more natural appearing condition.
 - Prescription 6: Reduce Height of Boulders**
 - Boulders shall be capped (blasted with explosives) to a height between 12 to 18 inches.
 - Boulders will be moved by hand whenever possible, but the equipment onsite may also be utilized.
 - Fragments shall be placed as to maximize contact with the soil surface with efforts to mimic the natural surroundings.

- IMPROVING SOIL RESOURCES**
 - Rather than simply spreading the wood chips or other organic material on top of the soil, use the aged organic material from the Heavenly stockpile to blend into the onsite soil when possible based on site constraints.

- WILDLIFE HABITAT**
 - Leave all shrubs and groundcover that are 18" in height or less in the corridor.
 - Leave some areas of bare soil in order to serve as seed caches for rodents and birds.
 - When placing rock on the slope, create pockets within groups of rock and create rock ledges with overhangs in order to provide refuge for rodents and small mammals.
 - Rocks that are capped should have any removed pieces that are intact left in the corridor and arranged in such a manner that leaves overhangs and other spaces for wildlife shelter.
 - Provide variety of higher heights of rock, not simply the minimum height of 12 inches (this technique will also provide visual quality benefits).
 - Logs equal to or less than 18" diameter will be trimmed of branches so that all branches that are lower in height than the diameter of the log remain in order to provide micro-scale habitat for rodents and small mammals.
 - Logs between 12" and 18" diameter should be present in densities at or greater than the surrounding forest, or not less than 10 logs per acre, whichever is greater.
 - Logs should be aligned across the slope on the ground surface.
 - Logs greater than 18" in diameter shall be moved to the edge of the corridor.
- VISUAL QUALITY**
 - Randomly feather logs across the slope from the cleared corridor into the edges of the adjacent forested areas in order to add visual variety and avoid uniform log placement.
 - Do not create longitudinal depressions or troughs that can serve as conduits for surface water runoff removing large volumes of soil or rock which result in a significant alteration of the slope shape.

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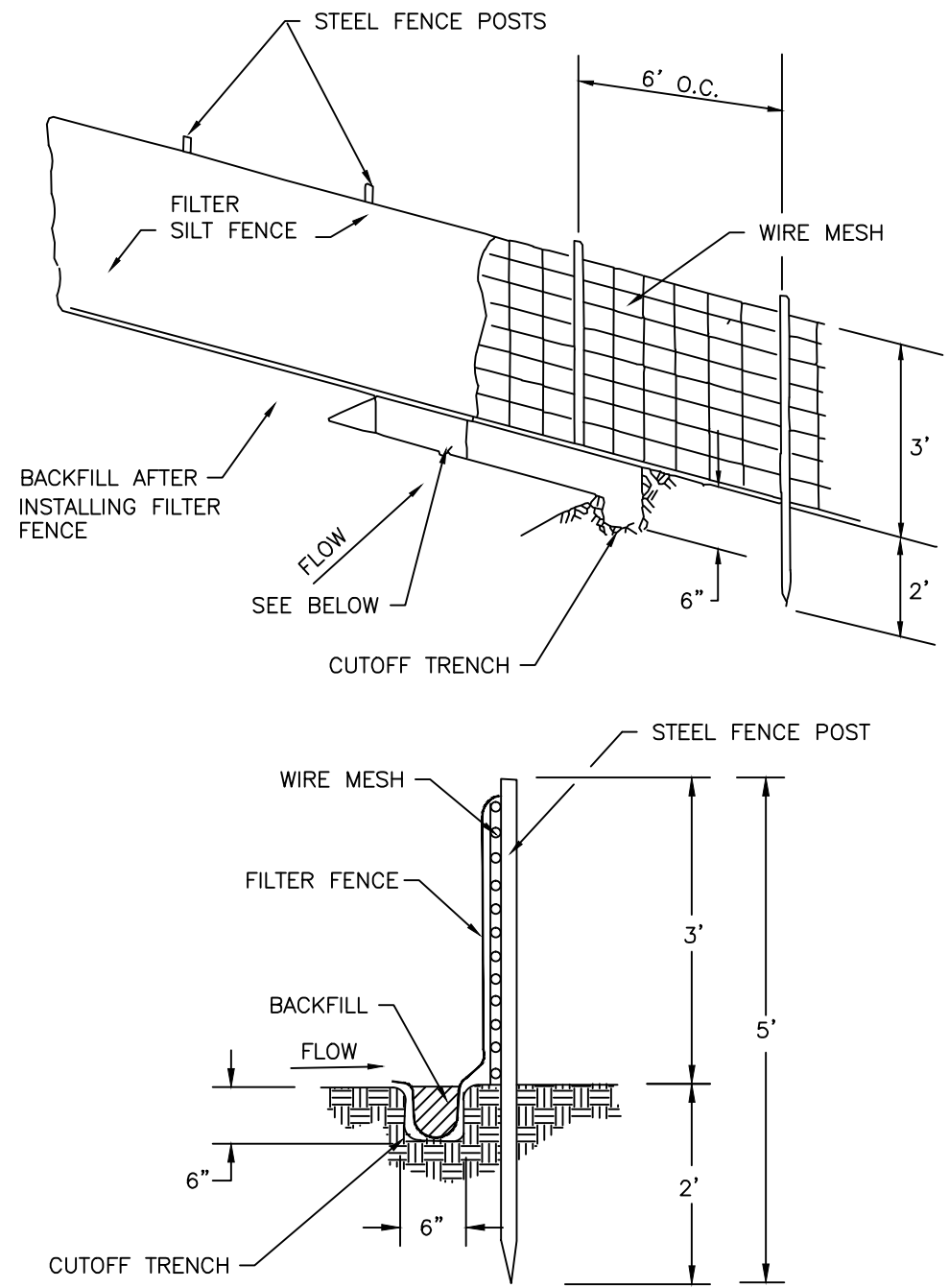
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REVISION	DATE

HEAVENLY MOUNTAIN RESORT Adventure Peak Epic Discovery Activities	SNOW CAT EVACUATION ROUTE
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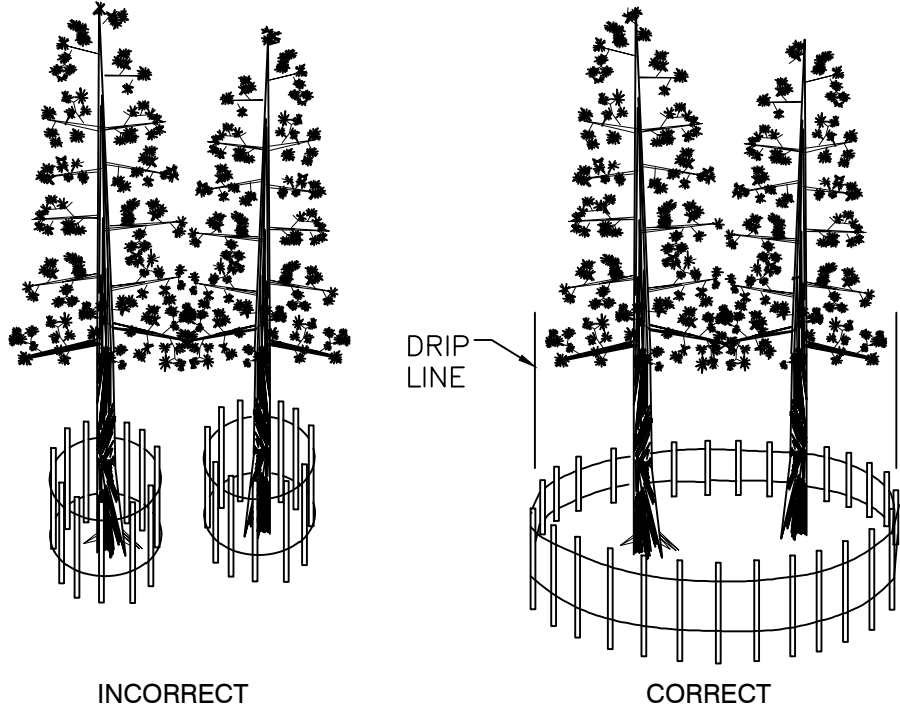
SHEET 8



- NOTES:
1. THE CONTRACTOR MAY USE MANUFACTURED FILTER FENCING IN LIEU OF THE ABOVE, SUBJECT TO SUBMITTAL OF MANUFACTURER'S DATA SHEETS TO THE ENGINEER FOR APPROVAL.
 2. WIRE MESH CAN BE DELETED IF POST SPACING IS REDUCED TO 4-FOOT OC.
 3. ENDS OF RUN OF FILTER FENCE SHALL BE TURNED UPHILL TO FORM A 'J'.

TEMPORARY EROSION CONTROL TYPICAL FILTER FENCE

NO SCALE

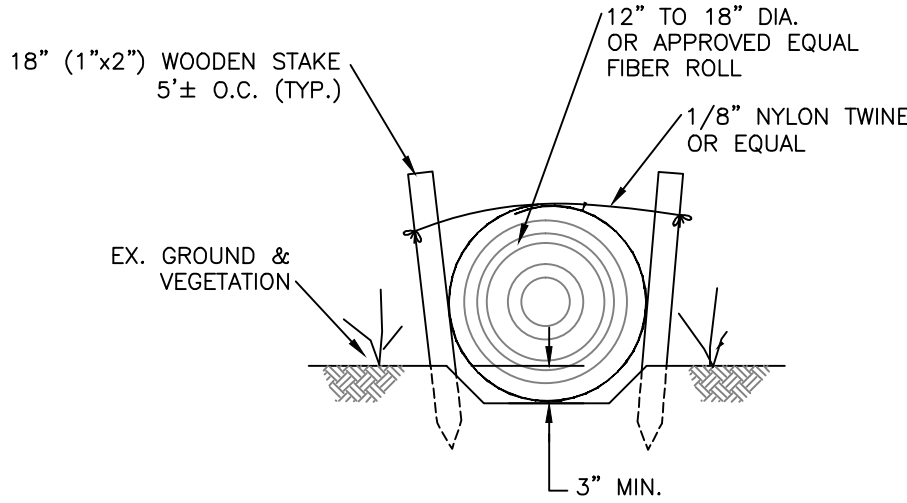


TREE PROTECTION FENCING

- NOTE:
1. TEMPORARY FENCING TO BE A MINIMUM OF 4' HIGH.
 2. POSTS TO BE SET AT A MINIMUM OF 6' ON CENTERLINE FROM EACH OTHER.
 3. FENCING MATERIALS TO BE APPROVED BY THE ENGINEER.

TEMPORARY EROSION CONTROL TREE PROTECTION DETAIL

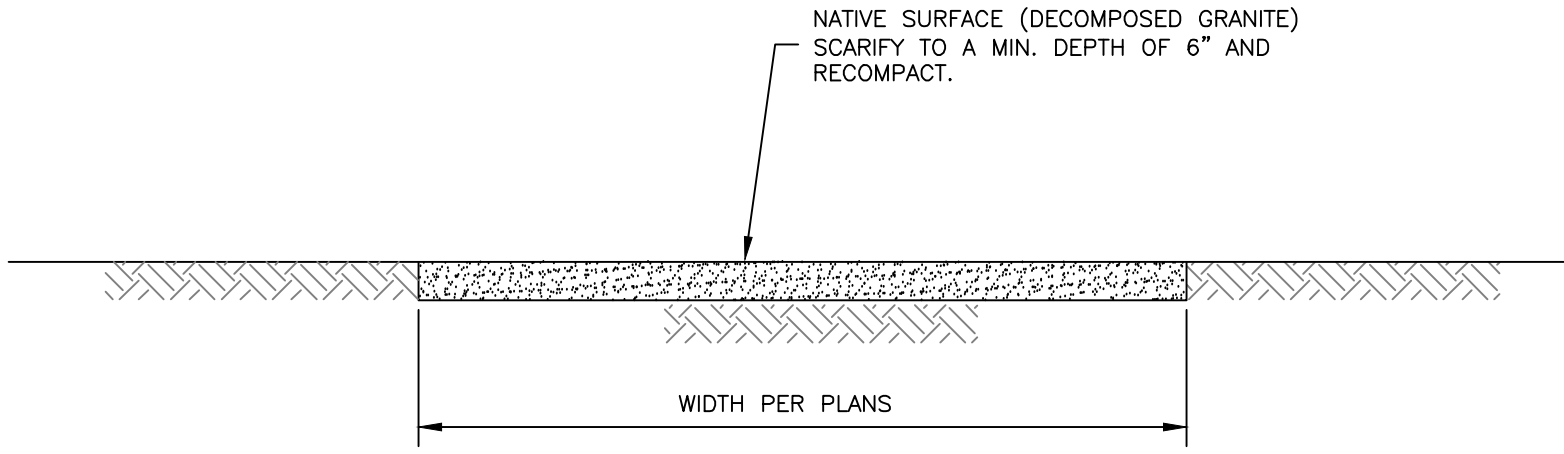
NO SCALE



- NOTES:
1. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" TO 6" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
 2. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 3. FIBER MATERIAL SHALL BE BIODEGRADABLE WEED-FREE STRAW, JUTE, COIR, OR EXCELSIOR. MATERIALS REQUIRE TRPA AND U.S. FOREST SERVICE APPROVAL PRIOR TO INSTALLATION.

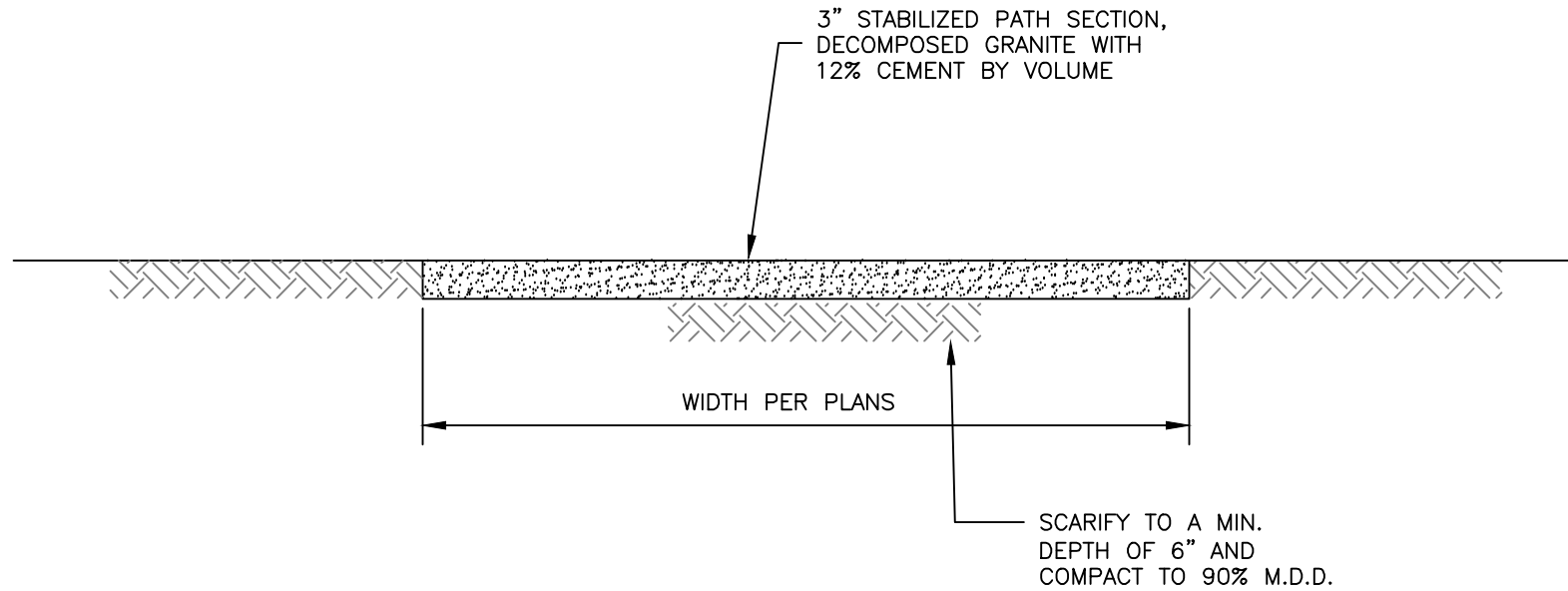
TEMPORARY SEDIMENT BARRIER FIBER ROLLS

NO SCALE



NATIVE SURFACE (DG) TRAIL DETAIL

NO SCALE



D/G CEMENT TRAIL DETAIL

NO SCALE

EROSION CONTROL NOTES

1. FOR ALL USE OF THE STAGING AREA WHEN SNOW COVER IS NOT PRESENT, HEAVENLY SHALL HAVE ALL TEMPORARY EROSION CONTROL MEASURES IN PLACE AND APPROVED BY TRPA. HEAVENLY SHALL INCORPORATE ADEQUATE DRAINAGE PROCEDURES DURING THE CONSTRUCTION PROCESS TO ELIMINATE EXCESSIVE PONDING AND/OR EROSION. AFTER A RAINSTORM, ALL SILT AND DEBRIS MUST BE REMOVED FROM CHECK BERMS AND DESILTING FACILITIES, AND ANY DAMAGED EROSION CONTROL MEASURES MUST BE REPAIRED.
2. AN ONSITE INSPECTION BY TRPA STAFF IS REQUIRED PRIOR TO ANY CONSTRUCTION OR GRADING ACTIVITY. TRPA STAFF SHALL DETERMINE IF THE ONSITE CONSTRUCTION TEMPORARY EROSION CONTROL MEASURES HAVE BEEN PROPERLY INSTALLED. NO GRADING OR CONSTRUCTION SHALL COMMENCE UNTIL TRPA PRE-GRADE CONDITIONS OF APPROVAL ARE MET.
3. HEAVENLY SHALL BE RESPONSIBLE TO INSTALL AND MAINTAIN ALL CONSTRUCTION BMPS TO ENSURE PROPER WORKING CONDITIONS. ROADS USED DURING CONSTRUCTION WILL BE INSPECTED DAILY BY HEAVENLY FOR DRAINAGE AND GRADING. RUTS WILL BE REPAIRED IMMEDIATELY. WATERBARS, CULVERTS, AND DITCHES (DRAINAGE STRUCTURES) WILL BE MAINTAINED ON A DAILY BASIS DURING CONSTRUCTION.
4. SEDIMENT BARRIERS AND CONSTRUCTION LIMIT FENCING WILL BE INSPECTED DAILY DURING CONSTRUCTION BY THE HEAVENLY FOR DAMAGE AND APPROPRIATE PLACEMENT. SEDIMENT BARRIERS SHALL BE REPAIRED AND/OR RELOCATED AS NEEDED ON A DAILY BASIS.
5. TEMPORARY BMP MEASURES SHALL BE IMPLEMENTED FOR ALL SUMMER IMPROVEMENT PROJECT LOCATIONS.
6. EXCAVATION SHALL NOT EXCEED 5-FEET BELOW GROUND SURFACE.
7. DISTURBED AREAS, ROADWAYS, AND STAGING AREAS USED DURING CONSTRUCTION SHALL BE SWEEPED AND PROVIDED WITH DUST ABATEMENT SUCH AS A WATER TRUCK AS NEEDED.
8. FOR ALL NATIVE TREES TO REMAIN, TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AROUND THE DRIPLINE OF ALL TREES ADJACENT TO THE ROAD AND WORK AREAS, WHERE FEASIBLE, OR OTHER MEASURES DEEMED APPROPRIATE BY THE TRPA INSPECTOR.
9. HEAVENLY SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS.
10. TURNING OR MANEUVERING OF BACKHOE, EXCAVATOR OR OTHER EQUIPMENT WILL BE MINIMIZED TO REDUCE SOIL DISTURBANCE.
11. ALL BARREN AREAS AND AREAS DISTURBED BY CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE TRPA HANDBOOK OF BEST MANAGEMENT PRACTICES. APPLICATION OF A MULCH MAY ENHANCE VEGETATIVE ESTABLISHMENT.

REVEGETATION SPECIFICATIONS

PART 1. GENERAL

ALL AREAS DISTURBED DURING CONSTRUCTION OTHER THAN EXISTING ACCESS ROADS, INCLUDING ACCESS CORRIDORS, STORAGE AREAS, STAGING AREAS, AND CONSTRUCTION AREAS SHALL BE STABILIZED ACCORDING TO THESE SPECIFICATIONS. UPON COMPLETION OF GRADING AND CONSTRUCTION, AND PRIOR TO REVEGETATION, ALL AREAS TO BE REVEGETATED WILL BE INSPECTED BY THE ENGINEER'S REVEGETATION SPECIALIST (RS). THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST FIVE WORKING DAYS PRIOR TO PLANTING TO SCHEDULE THE REQUIRED INSPECTION. FINAL SEEDING AND MULCH TREATMENT AREAS WILL BE STAKED IN THE FIELD AT THAT TIME. REVEGETATION TREATMENTS PERFORMED BY AN OUTSIDE CONTRACTOR SHALL NOT BE INITIATED WITHOUT THE APPROVAL OF THE ENGINEER. REVEGETATION PERFORMED BY HEAVENLY PERSONNEL NEED NOT BE APPROVED BY THE ENGINEER OR THE REVEGETATION SPECIALIST PRIOR TO INITIATING REVEGETATION WORK.

STABILIZATION TREATMENTS SHALL BE INSTALLED AS PER THESE SPECIFICATIONS AND THE PLAN SHEETS AND SHALL CONSIST OF WOOD CHIP INCORPORATION INTO THE TOP 12 INCHES OF SOIL, SEEDING, AND PINE NEEDLE/WOOD CHIP MULCH APPLICATION.

PART 2. PRODUCTS AND EXECUTION OF TREATMENTS

SEED

SEED MIXTURES ARE SHOWN IN TABLE 1 ON THIS SHEET.

SEED SHALL BE CLEAN NEW CROP SEED, PURCHASED PREMIXED ON A PURE LIVE SEED (PLS) BASIS. SEED SHALL BE DELIVERED TO THE SITE IN ORIGINAL UNOPENED CONTAINERS BEARING THE DEALER'S GUARANTEED ANALYSIS AND GERMINATION PERCENTAGE, AND SHALL MEET THE STATE OF CALIFORNIA FREEDOM FROM NOXIOUS WEED REQUIREMENTS. NO SUBSTITUTIONS IN THE SEED MIXTURE WILL BE ACCEPTED WITHOUT WRITTEN APPROVAL FROM THE RS.

SEED LABELS SHALL BE REMOVED FROM THE SEED SACKS BY THE RS AT THE TIME OF SEEDING. SEED LABELS WILL INCLUDE DOCUMENTATION FOR EACH TYPE OF SEED CERTIFYING THAT A RECOGNIZED LABORATORY TESTED THE SEED WITHIN 6 MONTHS OF THE DATE OF DELIVERY.

Table 1. Seed Mix

Common Name Variety	Scientific Name	Seeding Rate Pure Live Seed Pounds Per Acre
Squirreltail (High elevation collection)	Elymus elymoides ssp. Elymoides (Sierra)	10
Mokelumne or El Dorado Brome (or other high elevation Tahoe collection)	Bromus carinatus (Mokelumne)	5
Western Needlegrass (or other high elevation Tahoe collection)	Achnatherum occidentale	3
Antelope Bitterbrush (+5500 ft. Sierra Collection)	Purshia tridentata	5
Sulfur-flower Buckwheat	Erigonum umbellatum	2
Total PLS Pounds Per Acre Rate		25

PART 2 (CONT.) PRODUCTS AND EXECUTION OF TREATMENTS

WOOD CHIPS

WOOD CHIPS SHALL BE PREPARED FROM TREES REMOVED DURING CONSTRUCTION AND MAINTENANCE ACTIVITIES ON HEAVENLY MOUNTAIN RESORT. TOPS AND BRANCHES OF TREES REMOVED ON THIS AND OTHER HEAVENLY MOUNTAIN RESORT PROJECT SITES WILL BE CHIPPED TO A MINIMUM DIAMETER OF 2 INCHES, AND A MAXIMUM LENGTH OF 6 INCHES.

PINE NEEDLES

PINE NEEDLES SALVAGED FROM THE CONSTRUCTION SITE CAN BE USED AS A MULCH MATERIAL. PINE NEEDLE MULCH SHALL BE WEED FREE AND CLEAN WITHOUT DEBRIS, OR EXCESSIVE WOODY MATERIAL.

SOIL TREATMENT

ALL AREAS TO BE STABILIZED (WITH AND WITHOUT SEEDING) SHALL BE LOOSENED TO A DEPTH OF AT LEAST 12 INCHES TO ALLEVIATE COMPACTION AND TO INCORPORATE WOOD CHIPS TO IMPROVE WATER INFILTRATION AND WATER HOLDING CAPACITY. A UNIFORM 3-INCH LAYER OF WOOD CHIPS SHALL BE SPREAD ACROSS THE SURFACE OF THE TREATMENT AREAS. WOOD CHIPS SHALL BE INCORPORATED INTO THE TOP 12 INCHES OF SOIL BY AN APPROVED LOOSENING METHOD. AREAS SHALL BE RAKED SMOOTH FOLLOWING WOOD CHIP INCORPORATION.

SEEDBED PREPARATION

AREAS DESIGNATED FOR SEEDING BY THE RS SHALL BE UNIFORMLY BROADCAST SEEDED WITH HAND OPERATED BROADCAST SEEDERS. THE CONTRACTOR SHALL PROVIDE THE RS A WRITTEN STATEMENT OR SITE DEMONSTRATION TO VERIFY THAT THE SEEDING BROADCAST EQUIPMENT HAS BEEN CALIBRATED TO THE SPECIFIED APPLICATION RATES. LARGE AND SMALL SIZE SEED AS INDICATED IN TABLE 1 SHALL BE BROADCAST IN SEPARATE APPLICATIONS. SEEDING SHALL NOT OCCUR UNDER CONDITIONS THAT WOULD ALLOW SEED TO BECOME WIND BORN. SEED SHALL NOT BE INCORPORATED AND APPLIED WITH HYDROMULCH. IMMEDIATELY FOLLOWING BROADCASTING, THE SEEDED AREAS SHALL BE LIGHTLY HAND-RAKED TO PLACE THE SEED AT DEPTH OF ¼ TO ½ INCH INTO THE SOIL. NO FURTHER VEHICULAR ACCESS WILL BE ALLOWED ON TREATMENT AREAS UPON COMPLETION OF SEEDING. SEEDINGS SHALL NOT BE LEFT OVERNIGHT WITHOUT RECEIVING MULCH TREATMENT.

PINE NEEDLE/ WOOD CHIP MULCH

ALL SEEDED AREAS SHALL BE MULCHED WITH PINE NEEDLES OR WOOD CHIPS. PINE NEEDLE MULCH SHALL BE SPREAD ACROSS SEEDED AREAS IN A LOOSE 2" LAYER TO ACHIEVE A MINIMUM OF 90 PERCENT COVER.

UNSEEDED TREATMENT AREAS SHALL BE MULCHED WITH WOOD CHIPS SPREAD IN A UNIFORM 6 TO 8 INCH LAYER.

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EAST PEAK LAKE BASIN EPIC DISCOVERY ACTIVITIES

HEAVENLY MOUNTAIN RESORT
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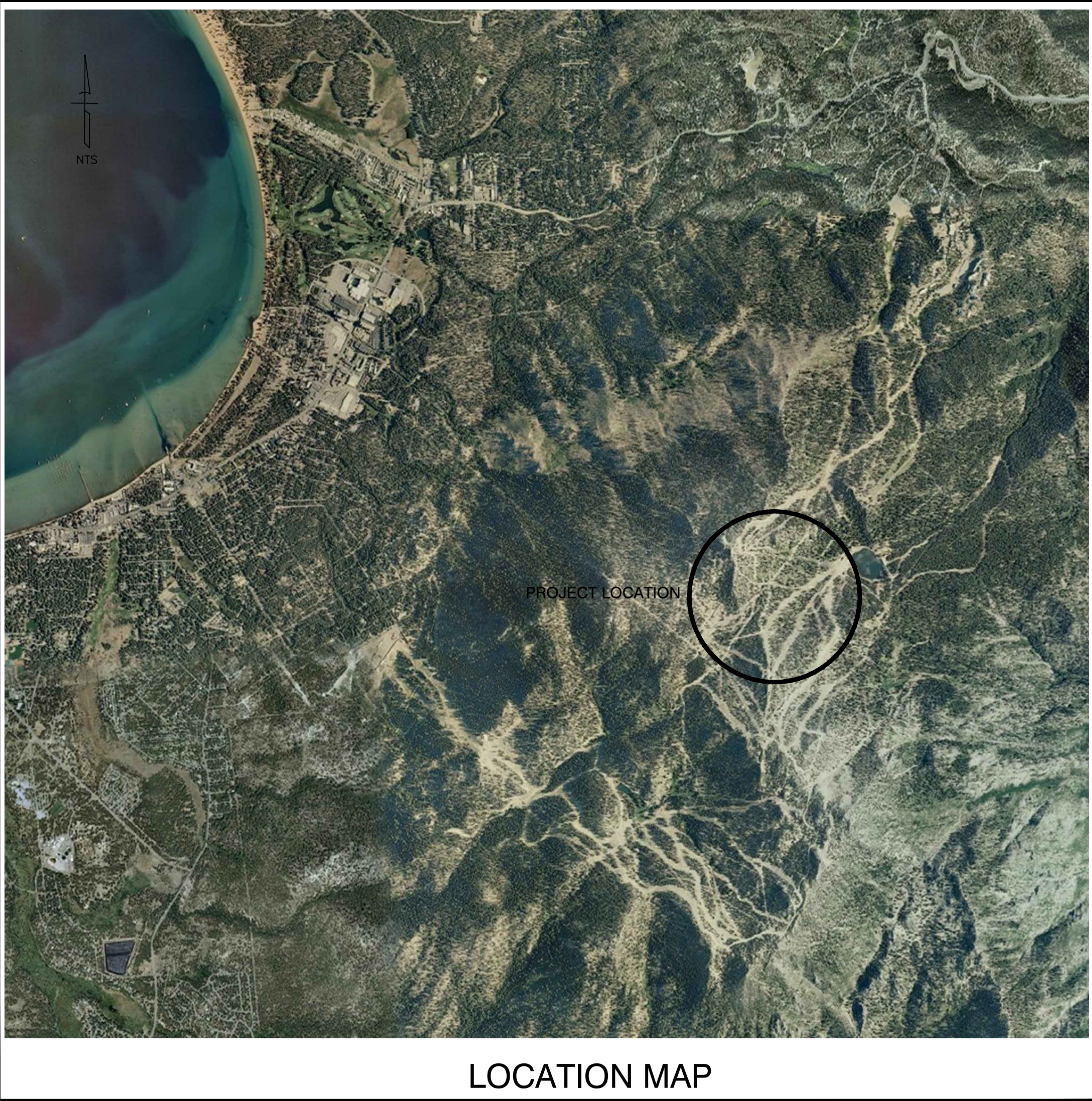
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DOUGLAS COUNTY, NEVADA

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STANDARD ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE	I.E.	INVERT ELEVATION
@	AT	IMPROV.	IMPROVEMENT
AGG.	AGGREGATE	L.F.	LINEAR FEET
APPROX.	APPROXIMATE	M.H.	MANHOLE
BLDG.	BUILDING	MAX.	MAXIMUM
BLVD	BOULEVARD	MIN.	MINIMUM
BM	BENCH MARK	MON.	MONUMENT
C.B.	CATCH BASIN	NTS	NOT TO SCALE
C & G	CURB AND GUTTER	O.G.	ORIGINAL GROUND
CL	CENTERLINE	P.C.C.	PORTLAND CONCRETE CEMENT
CMP	CORRUGATED METAL PIPE	PE	POLYETHYLENE
CO	CLEAN OUT	PL	PROPERTY LINE
CONC.	CONCRETE	PP	POWER POLE
CULV.	CULVERT	RCP	REINFORCED CONCRETE PIPE
C.Y.	CUBIC YARDS	S.F.	SQUARE FEET
D.I.	DROP INLET	SD	STORM DRAIN
DIA.	DIAMETER	SDMH	STORM DRAIN MANHOLE
DR	DRIVE	SHT.	SHEET
E	ELECTRIC	SS	SANITARY SEWER
EL., ELEV.	ELEVATION	SSCO	SANITARY SEWER CLEANOUT
EXIST., EX.	EXISTING	SSMH	SANITARY SEWER MANHOLE
FG	FINISH GRADE	STD.	STANDARD
F.H.	FIRE HYDRANT	TELE.	TELEPHONE
FL	FLOWLINE	TYP.	TYPICAL
FND.	FOUND	UTIL.	UTILITY
G	GAS	W	WATER



LOCATION MAP

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SHEET 4	PANORAMA BIKE TRAIL
SHEET 5	EAST PEAK CANOPY TOUR, PATHS AND WATER ACTIVITIES
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SHEET 7	DETAIL SHEET
SHEET 8	TRAIL GRADING DETAILS

EAST PEAK CONSTRUCTION PLAN SET

SHEET .A0	TITLE SHEET
SHEET C1	EAST PEAK CANOPY TOUR PLAN
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SHEET A8	HEX PLATFORM IMAGES
SHEET A9	LADDER AND SKYBRIDGE DETAILS

Project Coverage Table (Rev 02-27-14)

New Coverage	Existing 1a	Proposed 1a	Net Change
East Peak Basin Epic Discoveries			
East Peak Lodge Hiking Trail (in Basin Segments)	Trails	1,210	1,210
Total East Peak Basin Epic Discoveries	-	1,210	1,210
Total Coverage	0	1,210	1,210

Coverage Summary Table

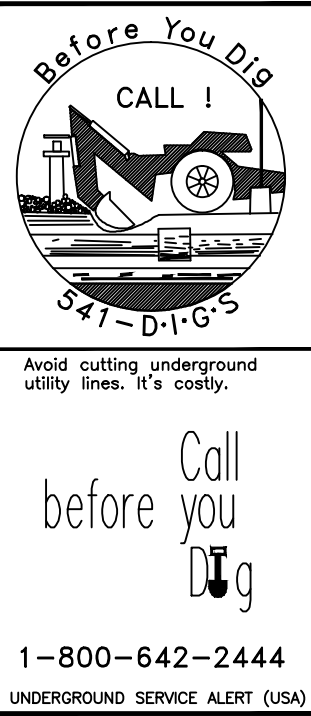
Maximum Allowable Coverage (per Master Plan)	1a	1b	Total
Maximum Allowable Coverage per Master Plan			2,053,854
Balance Remaining of Coverage and Banked Coverage per Table 3.4-4 of the Final EIR/EIS/EIS ¹	434,580	4,464	439,044
Project Subtotals			
Northbow/Olympic Express Lifts Project Balances	960	396	1,356
Gondola Hiking trails	54,501	0	54,501
Mid Station Road	50,469	0	50,469
Northbow/Olympic Express Lifts - Plan Revision	216	0	216
World Cup/East Bowl Snowmaking - Plan Revision	283	0	283
Calif. Base Surface Lift Replacement	1,572	0	1,572
Skyline Trail Grading and Snowmaking	1,134	0	1,134
Top of the Gondola Lodge	42,387	0	42,387
Adjusted Gondola Permit Coverage	-27,519	0	-27,519
Umbrella Bar Relocation	651	0	651
Covered Surface Lift and Snowmaking	10,039	0	10,039
California Side Trail Widening	0	0	0
Adventure Peak Improvements	6,207	0	6,207
Zipline Adventure Ride	4,916	0	4,916
Verizon Angel's Roost Cell Tower and Back-up Bldg	584	0	584
Epic Race Course Electrical	0	0	0
Summer Activities	22,213	0	22,213
Tamarack Lodge Modifications	537	0	537
Adventure Peak Epic Discoveries	58,154	0	58,154
Removal of Gondola Hiking Trails	-54,501	0	-54,501
East Peak Basin Epic Discoveries	1,210	0	1,210
Sky Meadows Basin Epic Discoveries	26,816	772	27,588
Subtotals	200,829	1,168	201,997
Balance Remaining Upon Project Completion	233,751	3,296	237,047

1. Includes 10,541 square feet of existing coverage attributed to Sky Deck

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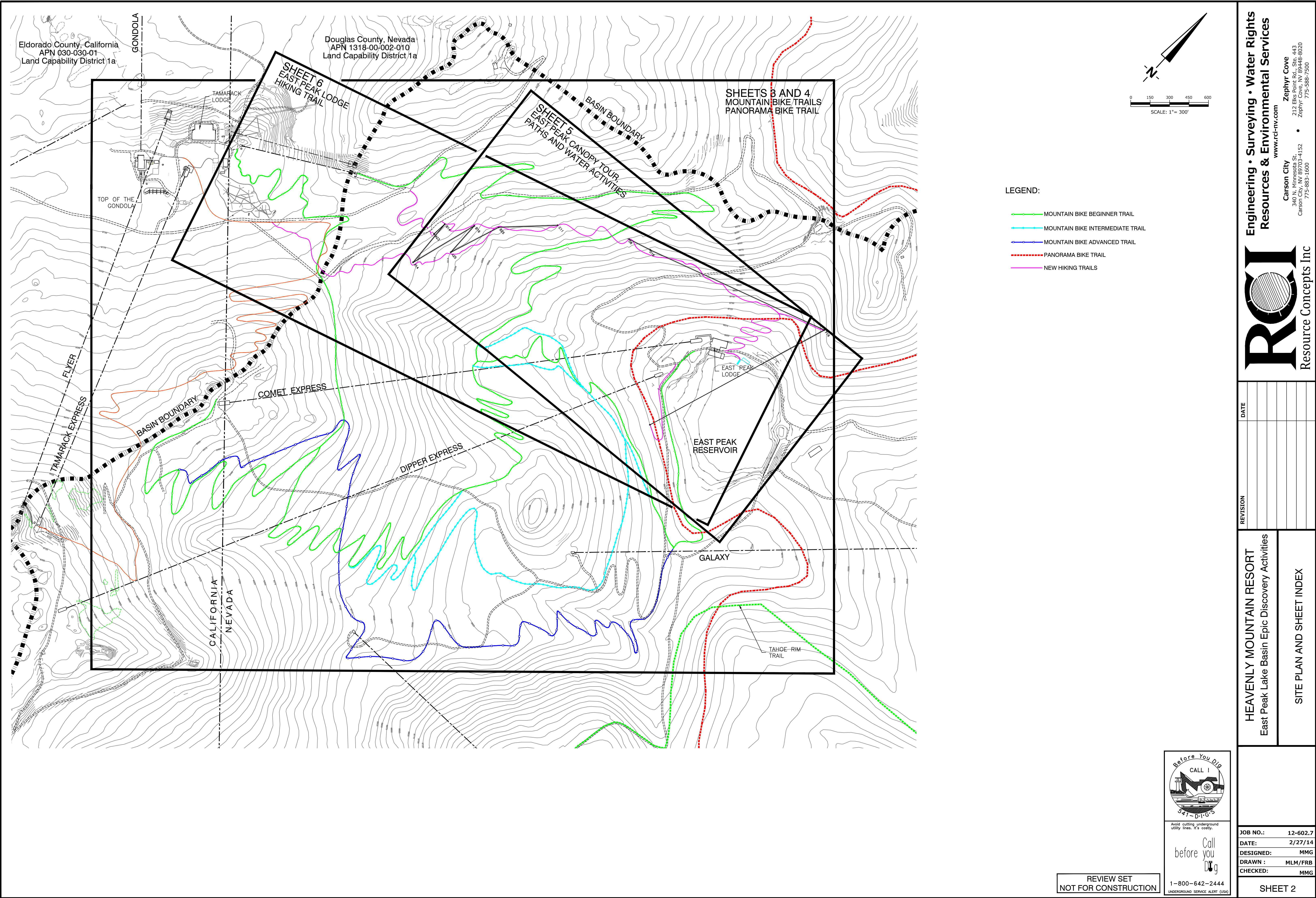


HEAVENLY MOUNTAIN RESORT
East Peak Lake Basin Epic Discovery Activities

TITLE SHEET

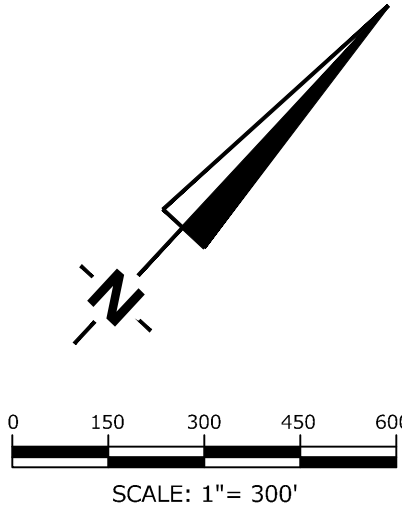
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SHEET 1



LEGEND:

- MOUNTAIN BIKE BEGINNER TRAIL
- MOUNTAIN BIKE INTERMEDIATE TRAIL
- MOUNTAIN BIKE ADVANCED TRAIL
- PANORAMA BIKE TRAIL
- NEW HIKING TRAILS



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HEAVENLY MOUNTAIN RESORT
East Peak Lake Basin Epic Discovery Activities

SITE PLAN AND SHEET INDEX



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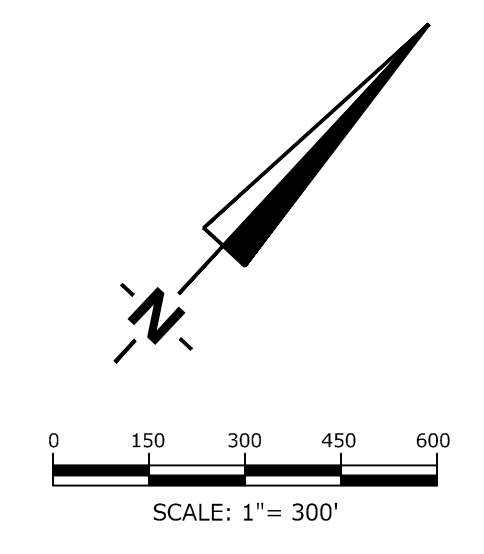
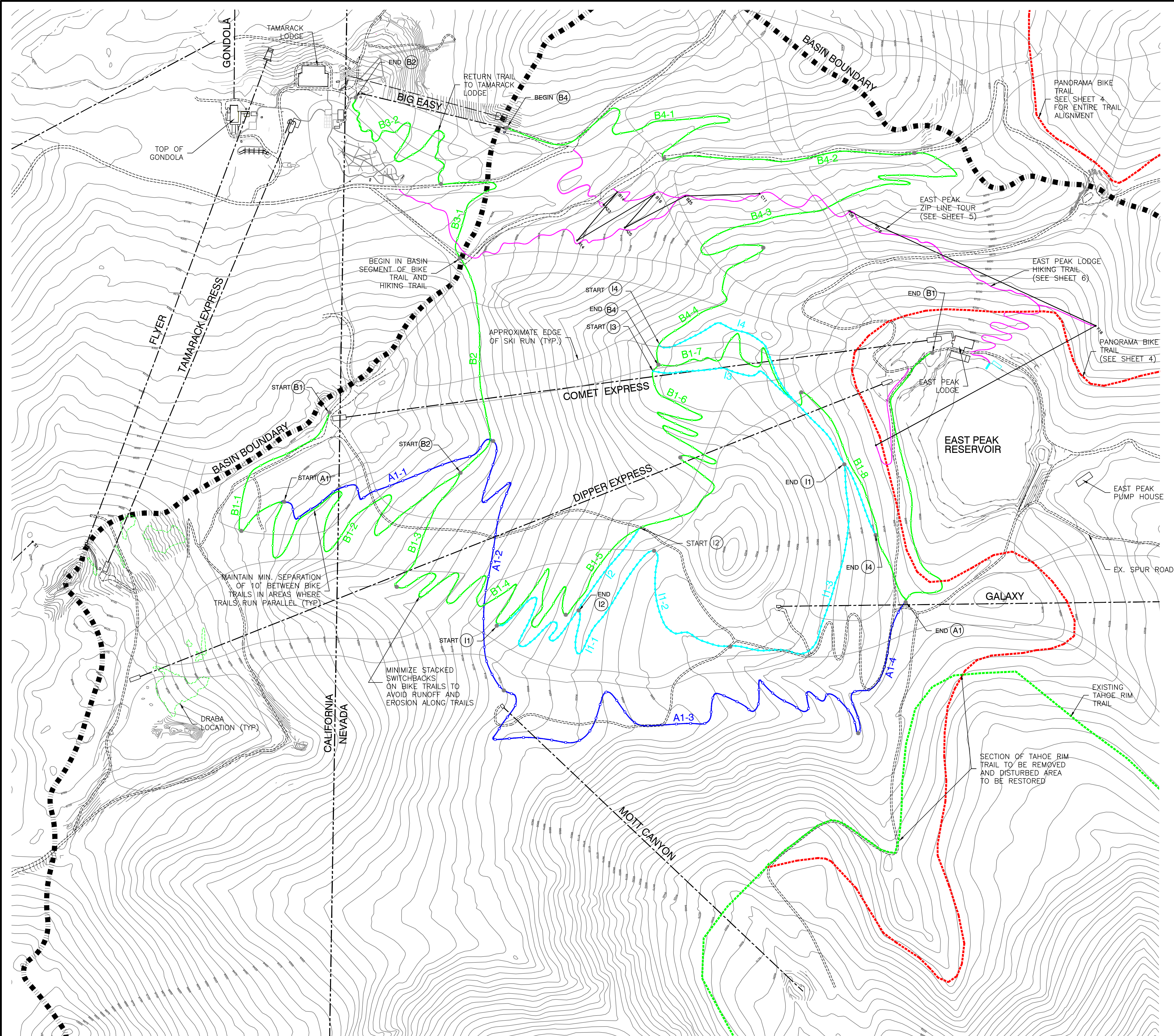
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SHEET 2



LEGEND:

- MOUNTAIN BIKE BEGINNER TRAIL
- MOUNTAIN BIKE INTERMEDIATE TRAIL
- MOUNTAIN BIKE ADVANCED TRAIL
- PANORAMA BIKE TRAIL
- NEW HIKING TRAILS
- MOUNTAIN BIKE TRAIL SEGMENT DESIGNATION
- MOUNTAIN BIKE TRAIL SEGMENT START / STOP
- EXISTING ROADS
- EXISTING TRAILS
- APPROXIMATE EDGE OF SKI RUN

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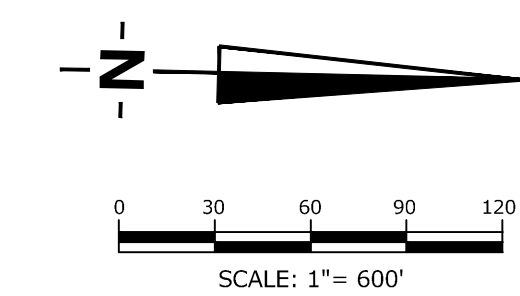
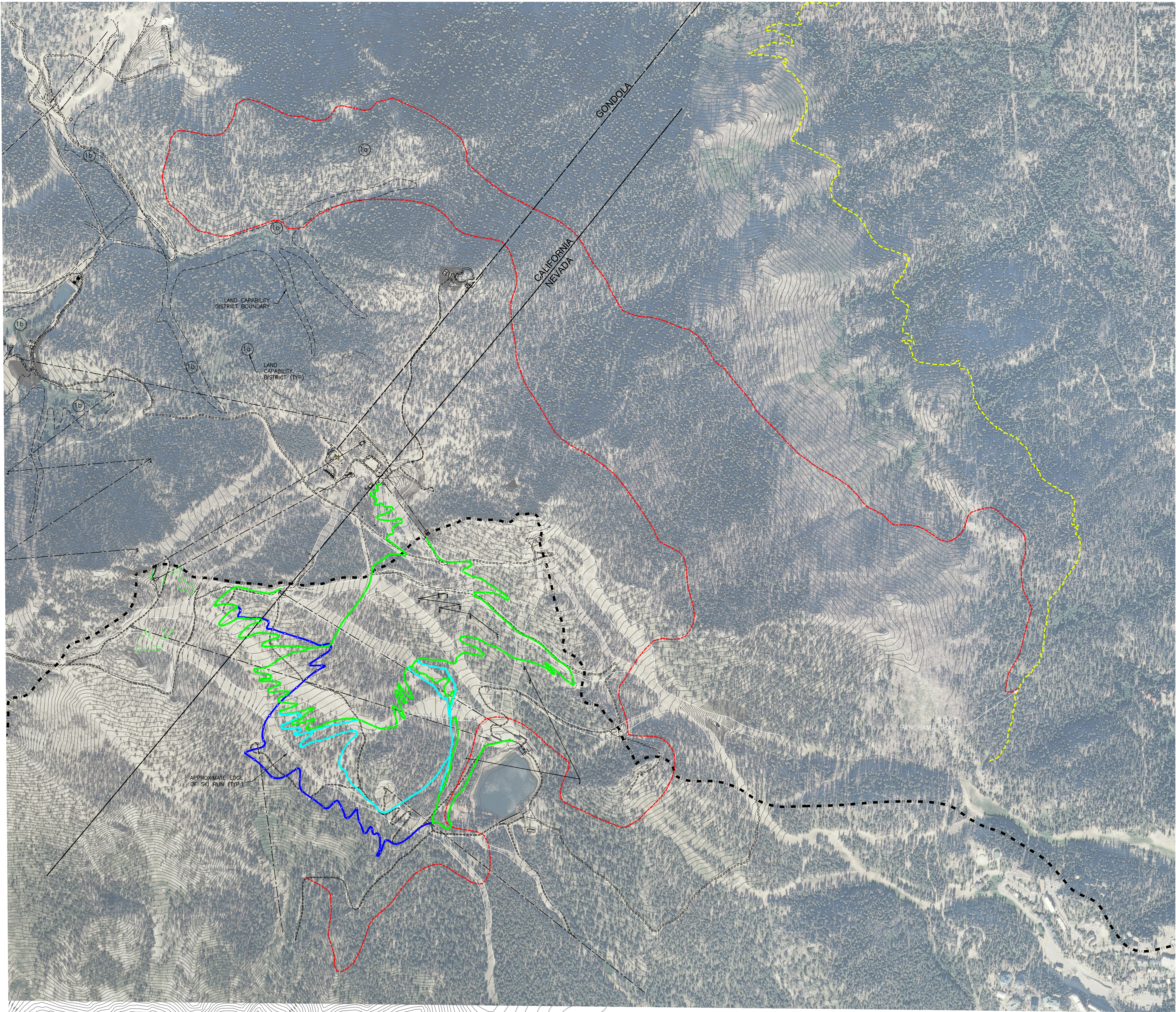
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HEAVENLY MOUNTAIN RESORT East Peak Lake Basin Epic Discovery Activities	MOUNTAIN BIKE PARK TRAIL

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SHEET 3



LEGEND:

- VAN SICKLE BIKE TRAIL
- MOUNTAIN BIKE BEGINNER TRAIL
- MOUNTAIN BIKE INTERMEDIATE TRAIL
- MOUNTAIN BIKE ADVANCED TRAIL
- PANORAMA BIKE TRAIL



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HEAVENLY MOUNTAIN RESORT East Peak Lake Basin Epic Discovery Activities	PANORAMA BIKE TRAIL
--	---------------------

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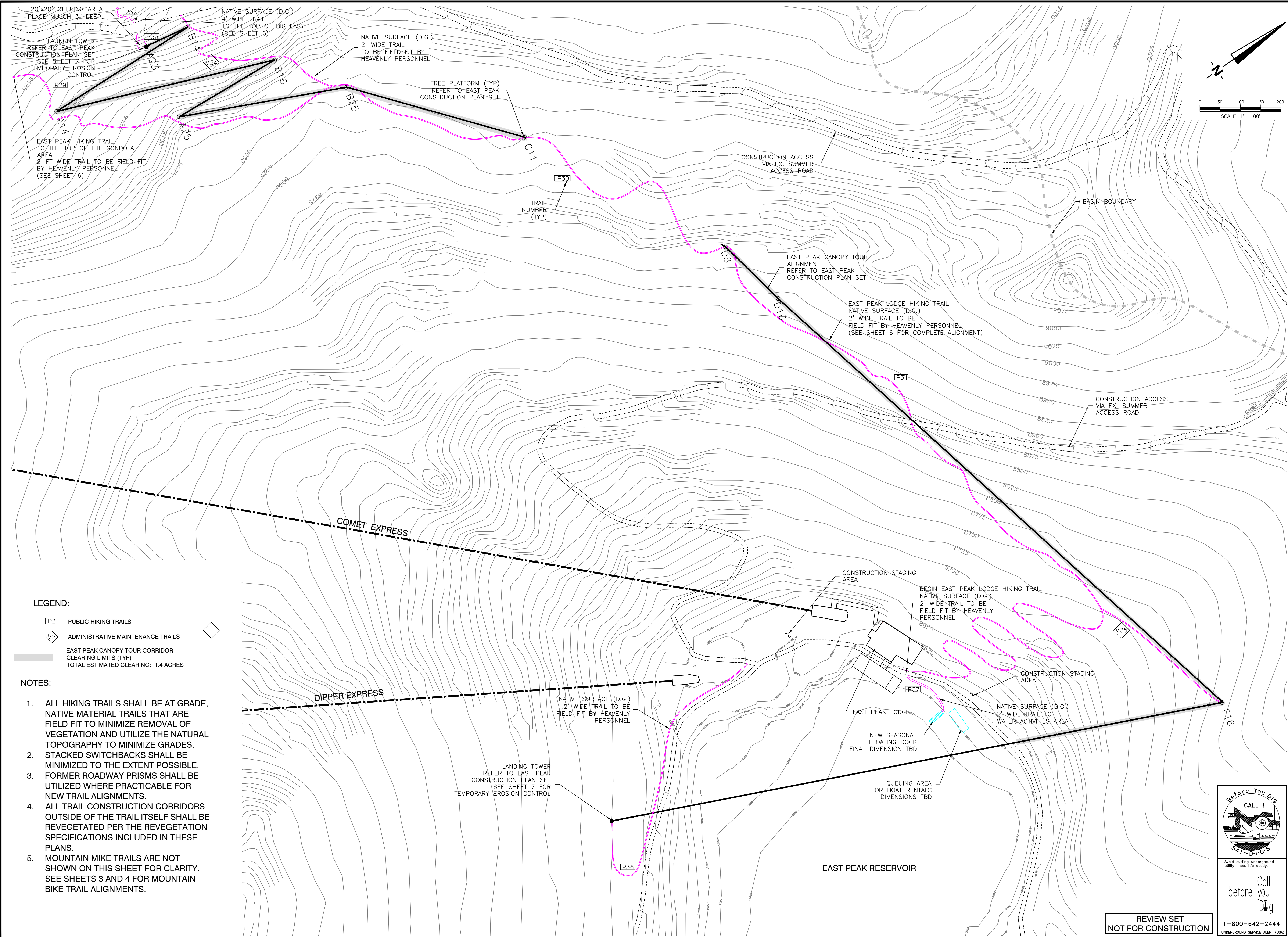
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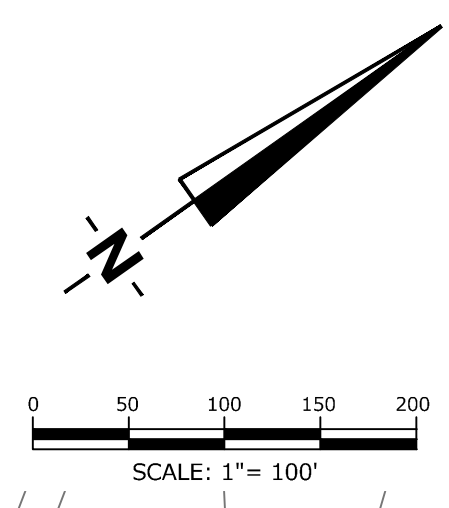
LEGEND:

P2 PUBLIC HIKING TRAILS

M2 ADMINISTRATIVE MAINTENANCE TRAILS

EAST PEAK CANOPY TOUR CORRIDOR
CLEARING LIMITS (TYP)
TOTAL ESTIMATED CLEARING: 1.4 ACRES

- NOTES:**
- ALL HIKING TRAILS SHALL BE AT GRADE, NATIVE MATERIAL TRAILS THAT ARE FIELD FIT TO MINIMIZE REMOVAL OF VEGETATION AND UTILIZE THE NATURAL TOPOGRAPHY TO MINIMIZE GRADES.
 - STACKED SWITCHBACKS SHALL BE MINIMIZED TO THE EXTENT POSSIBLE.
 - FORMER ROADWAY PRISMS SHALL BE UTILIZED WHERE PRACTICABLE FOR NEW TRAIL ALIGNMENTS.
 - ALL TRAIL CONSTRUCTION CORRIDORS OUTSIDE OF THE TRAIL ITSELF SHALL BE REVEGETATED PER THE REVEGETATION SPECIFICATIONS INCLUDED IN THESE PLANS.
 - MOUNTAIN MIKE TRAILS ARE NOT SHOWN ON THIS SHEET FOR CLARITY. SEE SHEETS 3 AND 4 FOR MOUNTAIN BIKE TRAIL ALIGNMENTS.

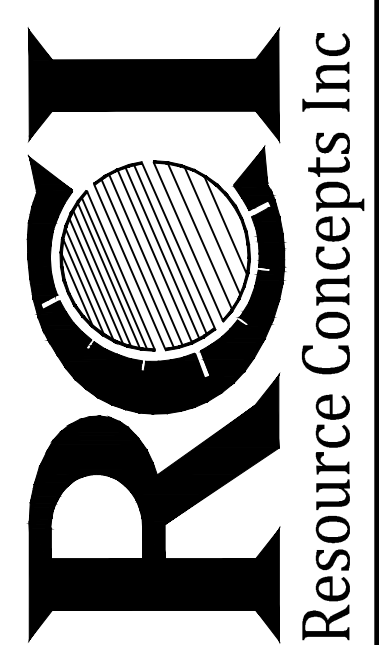


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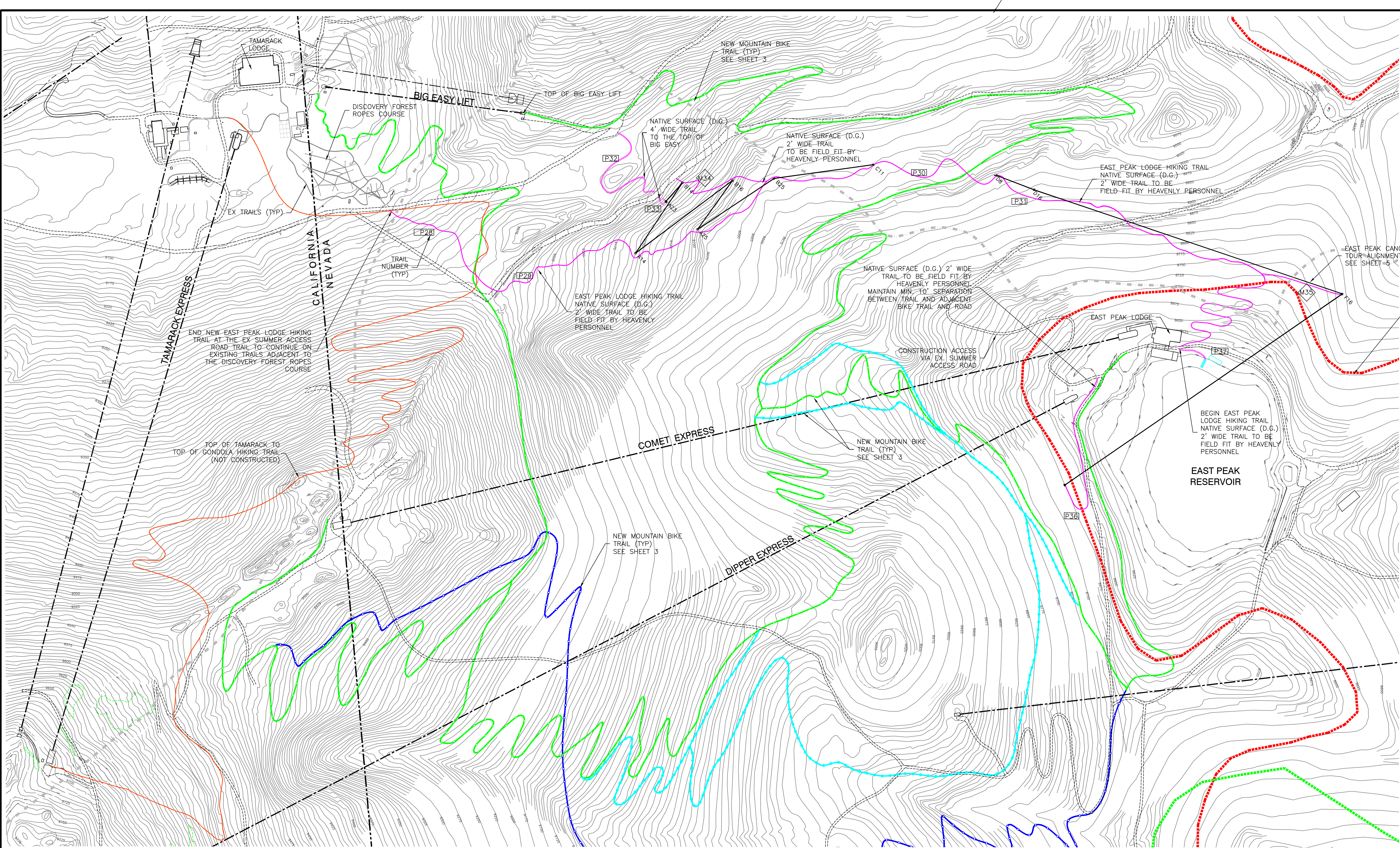
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SHEET 5



LEGEND:

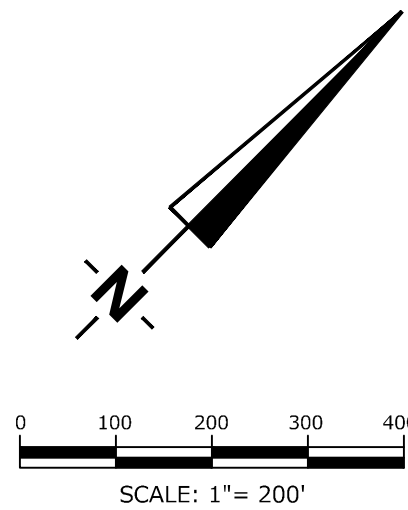
- PUBLIC HIKING TRAILS
- ADMINISTRATIVE MAINTENANCE TRAILS

NOTES:

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- MOUNTAIN MIKE TRAILS ARE NOT SHOWN ON THIS SHEET FOR CLARITY. SEE SHEETS 3 AND 4 FOR MOUNTAIN BIKE TRAIL ALIGNMENTS.

LEGEND:

- MOUNTAIN BIKE BEGINNER TRAIL
- MOUNTAIN BIKE INTERMEDIATE TRAIL
- MOUNTAIN BIKE ADVANCED TRAIL
- PANORAMA BIKE TRAIL
- NEW HIKING TRAILS
- TOP OF TAMARACK TO TOP OF GONDOLA TRAIL (NOT CONSTRUCTED)
- EXISTING ROADS
- EXISTING TRAILS



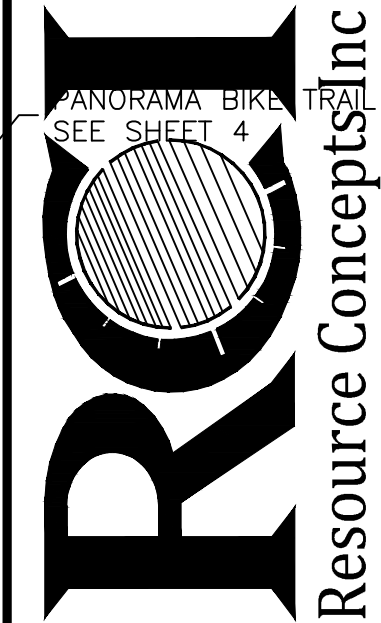
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EAST PEAK LODGE HIKING TRAIL

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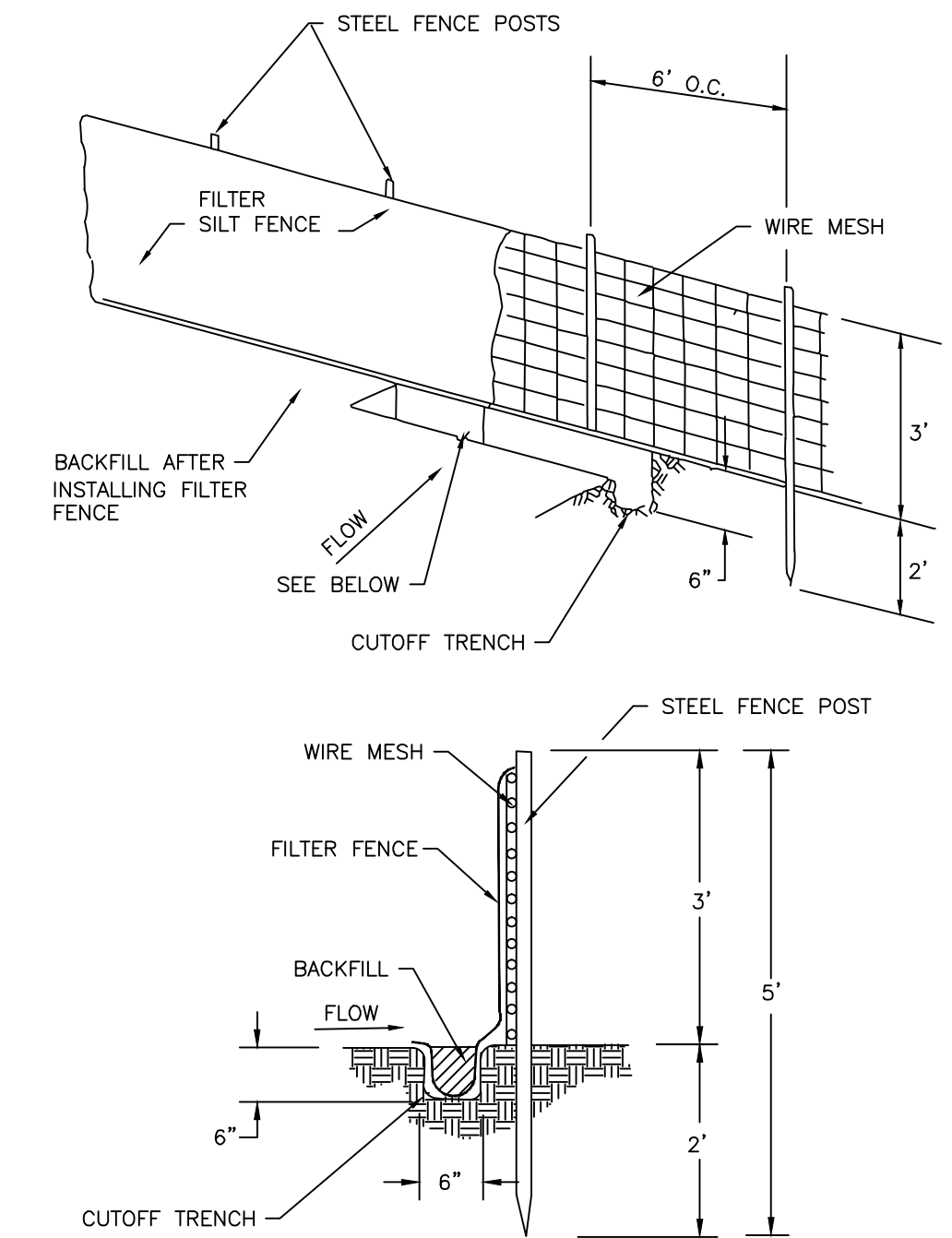
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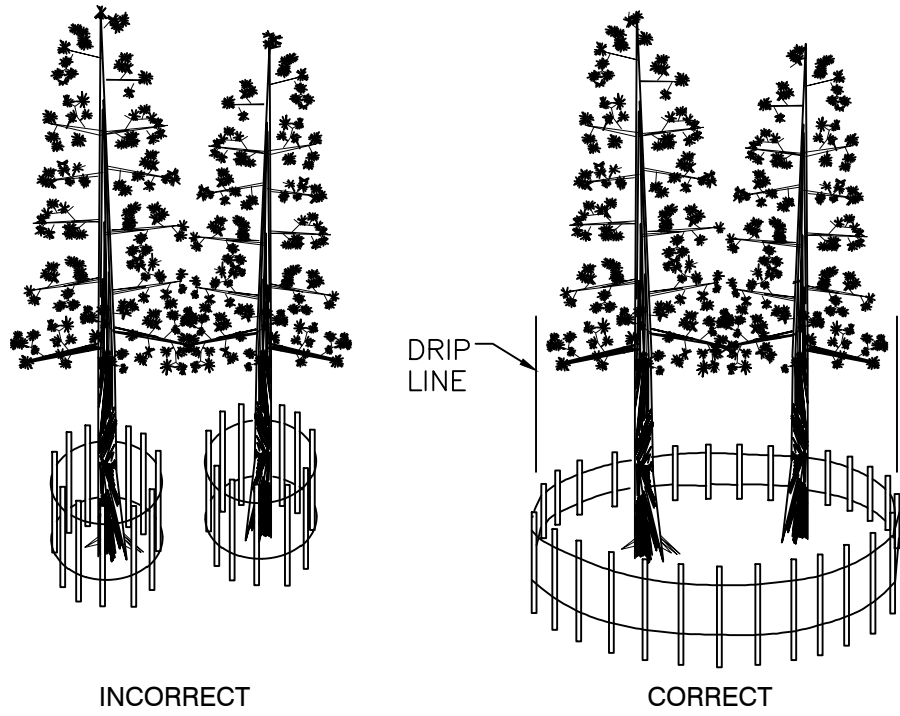
SHEET 6



- NOTES:
1. THE CONTRACTOR MAY USE MANUFACTURED FILTER FENCING IN LIEU OF THE ABOVE, SUBJECT TO SUBMITTAL OF MANUFACTURER'S DATA SHEETS TO THE ENGINEER FOR APPROVAL.
 2. WIRE MESH CAN BE DELETED IF POST SPACING IS REDUCED TO 4-FOOT OC.
 3. ENDS OF RUN OF FILTER FENCE SHALL BE TURNED UPHILL TO FORM A 'J'.

TEMPORARY EROSION CONTROL TYPICAL FILTER FENCE

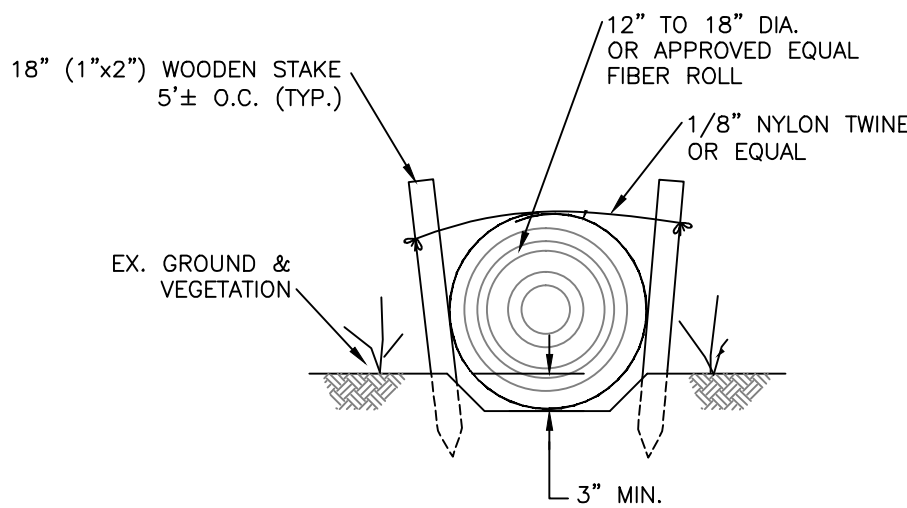
NO SCALE



- NOTE:
1. TEMPORARY FENCING TO BE A MINIMUM OF 4' HIGH.
 2. POSTS TO BE SET AT A MINIMUM OF 6' ON CENTERLINE FROM EACH OTHER.
 3. FENCING MATERIALS TO BE APPROVED BY THE ENGINEER.

TEMPORARY EROSION CONTROL TREE PROTECTION DETAIL

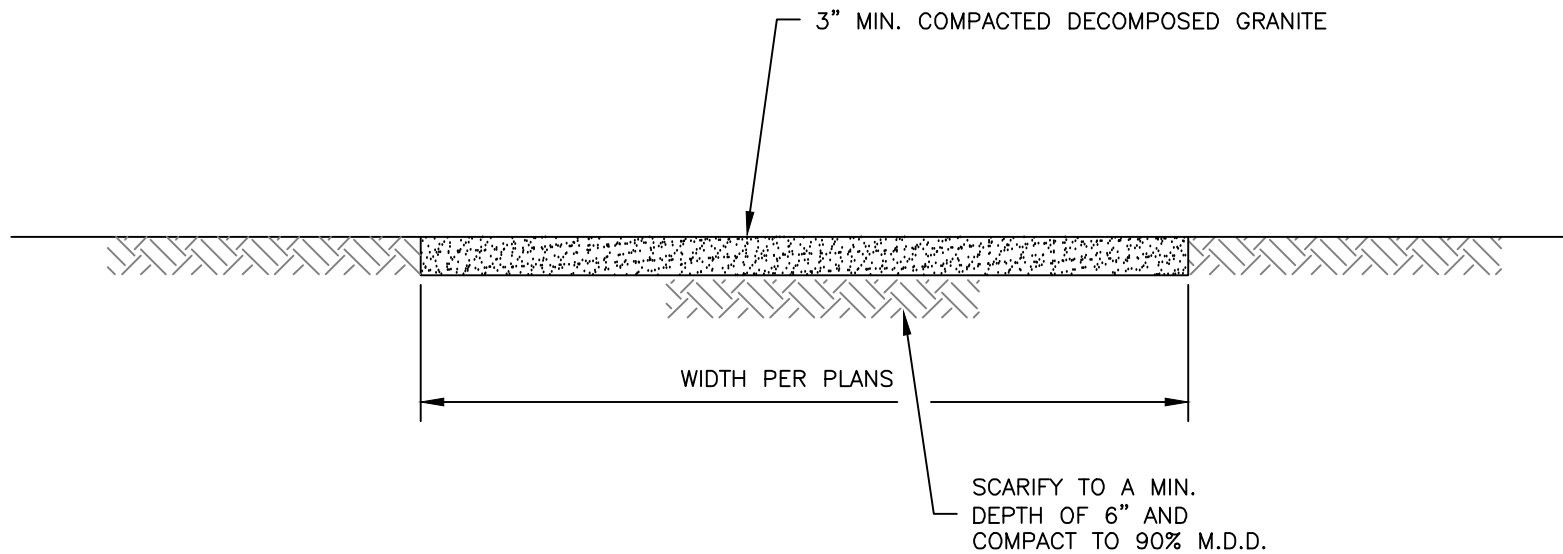
NO SCALE



- NOTES:
1. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" TO 6" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
 2. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 3. FIBER MATERIAL SHALL BE BIODEGRADABLE WEED-FREE STRAW, JUTE, COIR, OR EXCELSIOR. MATERIALS REQUIRE TRPA AND U.S. FOREST SERVICE APPROVAL PRIOR TO INSTALLATION.

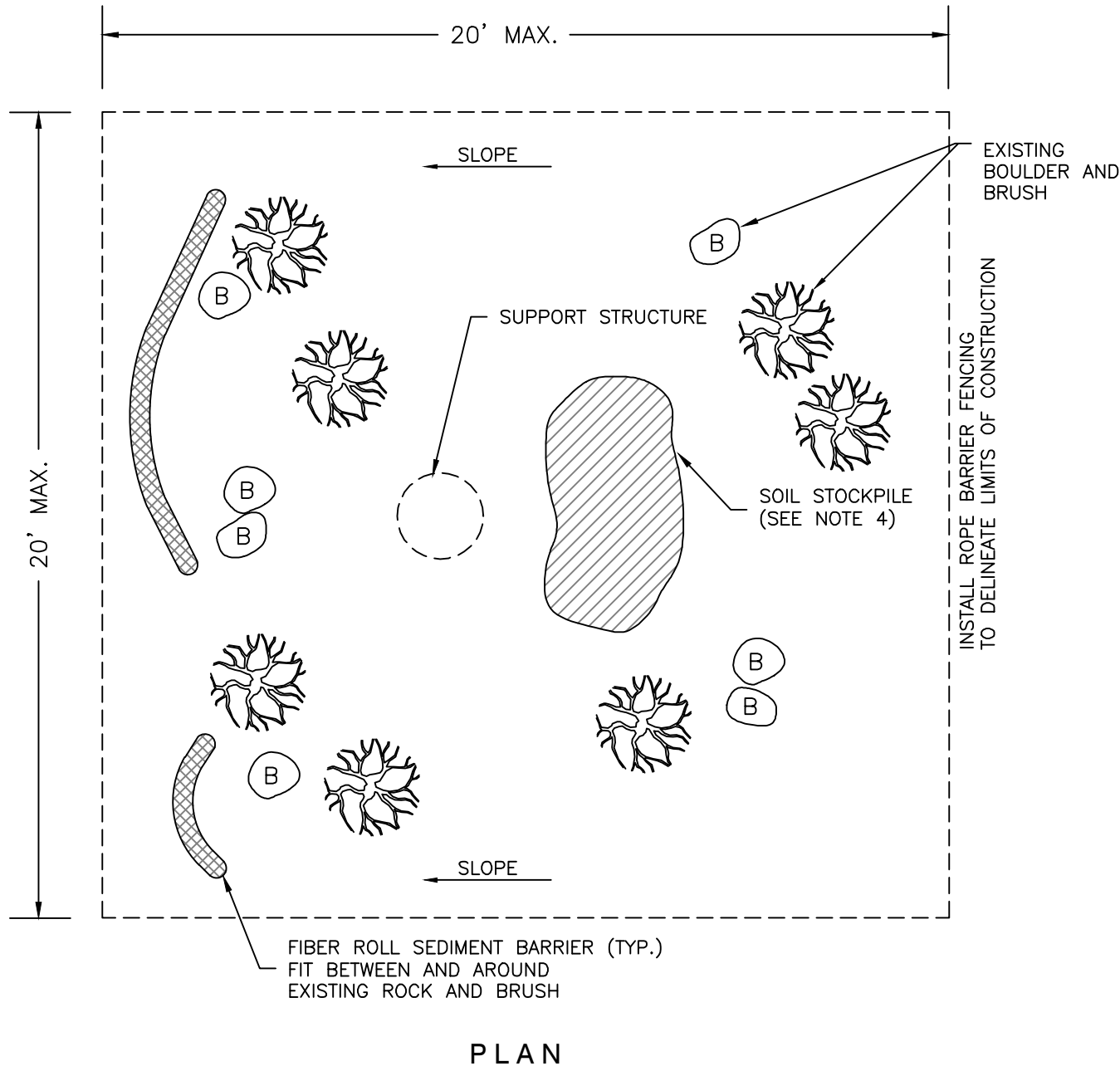
TEMPORARY SEDIMENT BARRIER FIBER ROLLS

NO SCALE

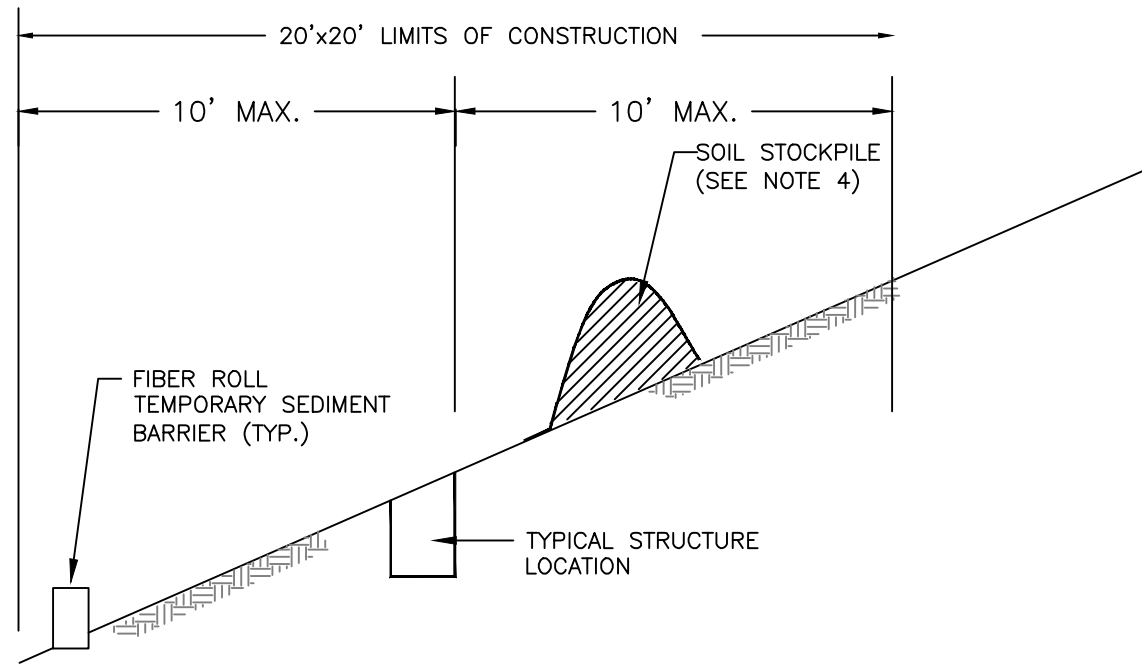


NATIVE SURFACE (DG) TRAIL DETAIL

NO SCALE



PLAN



ELEVATION

ZIPLINE GENERAL NOTES:

1. THERE SHALL BE A 20 FOOT BY 20 FOOT MAXIMUM CLEARING AROUND EACH ZIPLINE SUPPORT STRUCTURE.
2. ALL DISTURBED AREAS SHALL BE REVEGETATED PER THE REVEGETATION SPECIFICATIONS INCLUDED IN THESE PLANS. ANY VEGETATIVE DEBRIS FROM THE SITE SHALL BE CHIPPED AND/OR RE-SCATTERED OVER THE DISTURBED AREA.
3. SEZ AREAS WILL BE FLAGGED IN THE FIELD SO THAT THEY ARE CLEARLY VISIBLE DURING CONSTRUCTION.
4. STRUCTURE FOUNDATION EXCAVATION AND STRUCTURE PLACEMENT WILL BE COMPLETED USING HELICOPTERS TO MINIMIZE THE AMOUNT OF DISTURBANCE AT THE SITE. AFTER THE STRUCTURE HAS BEEN PLACED, ANY REMAINING SOIL FROM THE FOUNDATION EXCAVATION SHALL BE SPREAD WITHIN THE 20-FT X 20-FT CONSTRUCTION LIMITS. THESE AREAS SHALL BE REVEGETATED PER THE REVEGETATION SPECIFICATIONS INCLUDED IN THESE PLANS.

TEMPORARY EROSION CONTROL FOR STRUCTURE CONSTRUCTION

NOT TO SCALE

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REVISION	DATE

HEAVENLY MOUNTAIN RESORT
East Peak Lake Basin Epic Discovery Activities

DETAIL SHEET

EROSION CONTROL NOTES

1. FOR ALL USE OF THE STAGING AREA WHEN SNOW COVER IS NOT PRESENT, HEAVENLY SHALL HAVE ALL TEMPORARY EROSION CONTROL MEASURES IN PLACE AND APPROVED BY TRPA. HEAVENLY SHALL INCORPORATE ADEQUATE DRAINAGE PROCEDURES DURING THE CONSTRUCTION PROCESS TO ELIMINATE EXCESSIVE PONDING AND/OR EROSION. AFTER A RAINSTORM, ALL SILT AND DEBRIS MUST BE REMOVED FROM CHECK BERMS AND DESILTING FACILITIES, AND ANY DAMAGED EROSION CONTROL MEASURES MUST BE REPAIRED.
2. AN ONSITE INSPECTION BY TRPA STAFF IS REQUIRED PRIOR TO ANY CONSTRUCTION OR GRADING ACTIVITY. TRPA STAFF SHALL DETERMINE IF THE ONSITE CONSTRUCTION TEMPORARY EROSION CONTROL MEASURES HAVE BEEN PROPERLY INSTALLED. NO GRADING OR CONSTRUCTION SHALL COMMENCE UNTIL TRPA PRE-GRADE CONDITIONS OF APPROVAL ARE MET.
3. HEAVENLY SHALL BE RESPONSIBLE TO INSTALL AND MAINTAIN ALL CONSTRUCTION BMPs TO ENSURE PROPER WORKING CONDITIONS. ROADS USED DURING CONSTRUCTION WILL BE INSPECTED DAILY BY HEAVENLY FOR DRAINAGE AND GRADING. RUTS WILL BE REPAIRED IMMEDIATELY. WATERBARS, CULVERTS, AND DITCHES (DRAINAGE STRUCTURES) WILL BE MAINTAINED ON A DAILY BASIS DURING CONSTRUCTION.
4. SEDIMENT BARRIERS AND CONSTRUCTION LIMIT FENCING WILL BE INSPECTED DAILY DURING CONSTRUCTION BY THE HEAVENLY FOR DAMAGE AND APPROPRIATE PLACEMENT. SEDIMENT BARRIERS SHALL BE REPAIRED AND/OR RELOCATED AS NEEDED ON A DAILY BASIS.
5. TEMPORARY BMP MEASURES SHALL BE IMPLEMENTED FOR ALL SUMMER IMPROVEMENT PROJECT LOCATIONS.
6. EXCAVATION SHALL NOT EXCEED 5-FEET BELOW GROUND SURFACE.
7. DISTURBED AREAS, ROADWAYS, AND STAGING AREAS USED DURING CONSTRUCTION SHALL BE SWEEPED AND PROVIDED WITH DUST ABATEMENT SUCH AS A WATER TRUCK AS NEEDED.
8. FOR ALL NATIVE TREES TO REMAIN, TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AROUND THE DRIPLINE OF ALL TREES ADJACENT TO THE ROAD AND WORK AREAS, WHERE FEASIBLE, OR OTHER MEASURES DEEMED APPROPRIATE BY THE TRPA INSPECTOR.
9. HEAVENLY SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS.
10. TURNING OR MANEUVERING OF BACKHOE, EXCAVATOR OR OTHER EQUIPMENT WILL BE MINIMIZED TO REDUCE SOIL DISTURBANCE.
11. ALL BARREN AREAS AND AREAS DISTURBED BY CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE TRPA HANDBOOK OF BEST MANAGEMENT PRACTICES. APPLICATION OF A MULCH MAY ENHANCE VEGETATIVE ESTABLISHMENT.

REVEGETATION SPECIFICATIONS

PART 1. GENERAL

ALL AREAS DISTURBED DURING CONSTRUCTION OTHER THAN EXISTING ACCESS ROADS, INCLUDING ACCESS CORRIDORS, STORAGE AREAS, STAGING AREAS, AND CONSTRUCTION AREAS SHALL BE STABILIZED ACCORDING TO THESE SPECIFICATIONS. UPON COMPLETION OF GRADING AND CONSTRUCTION, AND PRIOR TO REVEGETATION, ALL AREAS TO BE REVEGETATED WILL BE INSPECTED BY THE ENGINEER'S REVEGETATION SPECIALIST (RS). THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST FIVE WORKING DAYS PRIOR TO PLANTING TO SCHEDULE THE REQUIRED INSPECTION. FINAL SEEDING AND MULCH TREATMENT AREAS WILL BE STAKED IN THE FIELD AT THAT TIME. REVEGETATION TREATMENTS PERFORMED BY AN OUTSIDE CONTRACTOR SHALL NOT BE INITIATED WITHOUT THE APPROVAL OF THE ENGINEER. REVEGETATION PERFORMED BY HEAVENLY PERSONNEL NEED NOT BE APPROVED BY THE ENGINEER OR THE REVEGETATION SPECIALIST PRIOR TO INITIATING REVEGETATION WORK.

STABILIZATION TREATMENTS SHALL BE INSTALLED AS PER THESE SPECIFICATIONS AND THE PLAN SHEETS AND SHALL CONSIST OF WOOD CHIP INCORPORATION INTO THE TOP 12 INCHES OF SOIL, SEEDING, AND PINE NEEDLE/WOOD CHIP MULCH APPLICATION.

PART 2. PRODUCTS AND EXECUTION OF TREATMENTS

SEED

SEED MIXTURES ARE SHOWN IN TABLE 1 ON THIS SHEET.

SEED SHALL BE CLEAN NEW CROP SEED, PURCHASED PREMIXED ON A PURE LIVE SEED (PLS) BASIS. SEED SHALL BE DELIVERED TO THE SITE IN ORIGINAL UNOPENED CONTAINERS BEARING THE DEALER'S GUARANTEED ANALYSIS AND GERMINATION PERCENTAGE, AND SHALL MEET THE STATE OF CALIFORNIA FREEDOM FROM NOXIOUS WEED REQUIREMENTS. NO SUBSTITUTIONS IN THE SEED MIXTURE WILL BE ACCEPTED WITHOUT WRITTEN APPROVAL FROM THE RS.

SEED LABELS SHALL BE REMOVED FROM THE SEED SACKS BY THE RS AT THE TIME OF SEEDING. SEED LABELS WILL INCLUDE DOCUMENTATION FOR EACH TYPE OF SEED CERTIFYING THAT A RECOGNIZED LABORATORY TESTED THE SEED WITHIN 6 MONTHS OF THE DATE OF DELIVERY.

Table 1. Seed Mix

Common Name Variety	Scientific Name	Seeding Rate Pure Live Seed Pounds Per Acre
Squirreltail (High elevation collection)	Elymus elymoides ssp. Elymoides (Sierra)	10
Mokelumne or El Dorado Brome (or other high elevation Tahoe collection)	Bromus carinatus (Mokelumne)	5
Western Needlegrass (or other high elevation Tahoe collection)	Achnatherum occidentale	3
Antelope Bitterbrush (+5500 ft. Sierra Collection)	Purshia tridentata	5
Sulfur-flower Buckwheat	Erigonum umbellatum	2
Total PLS Pounds Per Acre Rate		25

PART 2 (CONT.) PRODUCTS AND EXECUTION OF TREATMENTS

WOOD CHIPS

WOOD CHIPS SHALL BE PREPARED FROM TREES REMOVED DURING CONSTRUCTION AND MAINTENANCE ACTIVITIES ON HEAVENLY MOUNTAIN RESORT. TOPS AND BRANCHES OF TREES REMOVED ON THIS AND OTHER HEAVENLY MOUNTAIN RESORT PROJECT SITES WILL BE CHIPPED TO A MINIMUM DIAMETER OF 2 INCHES, AND A MAXIMUM LENGTH OF 6 INCHES.

PINE NEEDLES

PINE NEEDLES SALVAGED FROM THE CONSTRUCTION SITE CAN BE USED AS A MULCH MATERIAL. PINE NEEDLE MULCH SHALL BE WEED FREE AND CLEAN WITHOUT DEBRIS, OR EXCESSIVE WOODY MATERIAL.

SOIL TREATMENT

ALL AREAS TO BE STABILIZED (WITH AND WITHOUT SEEDING) SHALL BE LOOSENEED TO A DEPTH OF AT LEAST 12 INCHES TO ALLEVIATE COMPACTION AND TO INCORPORATE WOOD CHIPS TO IMPROVE WATER INFILTRATION AND WATER HOLDING CAPACITY. A UNIFORM 3-INCH LAYER OF WOOD CHIPS SHALL BE SPREAD ACROSS THE SURFACE OF THE TREATMENT AREAS. WOOD CHIPS SHALL BE INCORPORATED INTO THE TOP 12 INCHES OF SOIL BY AN APPROVED LOOSENING METHOD. AREAS SHALL BE RAKED SMOOTH FOLLOWING WOOD CHIP INCORPORATION.

SEEDBED PREPARATION

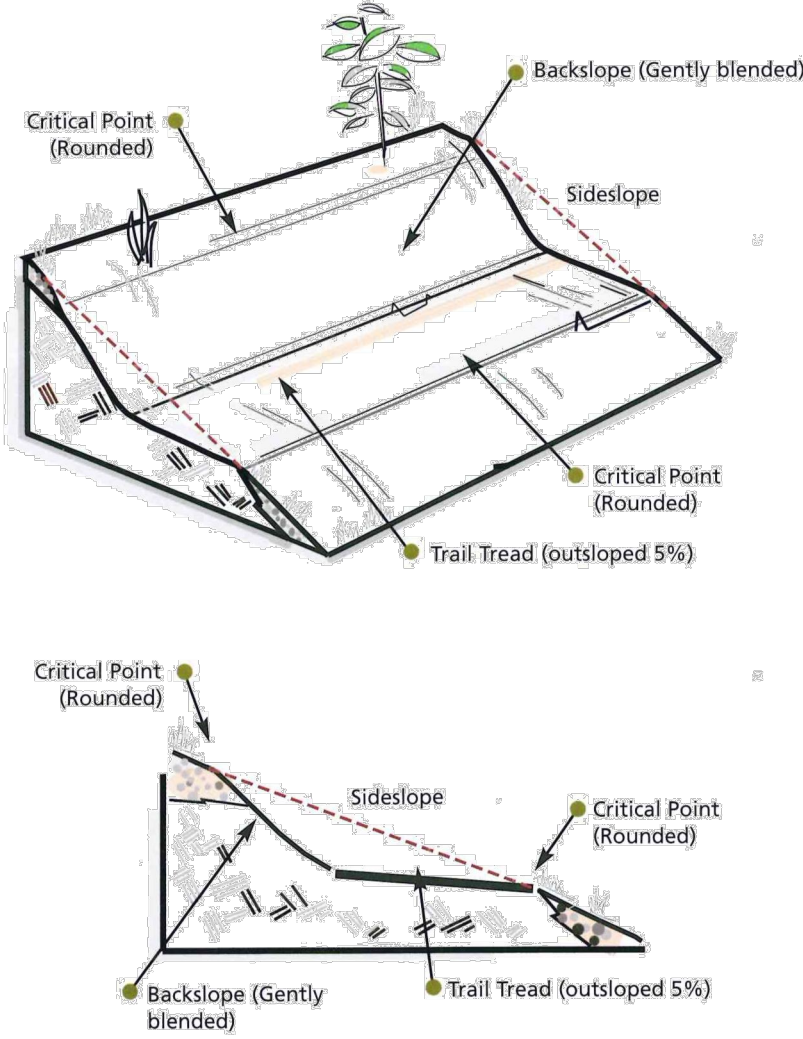
AREAS DESIGNATED FOR SEEDING BY THE RS SHALL BE UNIFORMLY BROADCAST SEEDED WITH HAND OPERATED BROADCAST SEEDERS. THE CONTRACTOR SHALL PROVIDE THE RS A WRITTEN STATEMENT OR SITE DEMONSTRATION TO VERIFY THAT THE SEEDING BROADCAST EQUIPMENT HAS BEEN CALIBRATED TO THE SPECIFIED APPLICATION RATES. LARGE AND SMALL SIZE SEED AS INDICATED IN TABLE 1 SHALL BE BROADCAST IN SEPARATE APPLICATIONS. SEEDING SHALL NOT OCCUR UNDER CONDITIONS THAT WOULD ALLOW SEED TO BECOME WIND BORN. SEED SHALL NOT BE INCORPORATED AND APPLIED WITH HYDROMULCH. IMMEDIATELY FOLLOWING BROADCASTING, THE SEEDED AREAS SHALL BE LIGHTLY HAND-RAKED TO PLACE THE SEED AT DEPTH OF ¼ TO ½ INCH INTO THE SOIL. NO FURTHER VEHICULAR ACCESS WILL BE ALLOWED ON TREATMENT AREAS UPON COMPLETION OF SEEDING. SEEDINGS SHALL NOT BE LEFT OVERNIGHT WITHOUT RECEIVING MULCH TREATMENT.

PINE NEEDLE/ WOOD CHIP MULCH

ALL SEEDED AREAS SHALL BE MULCHED WITH PINE NEEDLES OR WOOD CHIPS. PINE NEEDLE MULCH SHALL BE SPREAD ACROSS SEEDED AREAS IN A LOOSE 2" LAYER TO ACHIEVE A MINIMUM OF 90 PERCENT COVER.

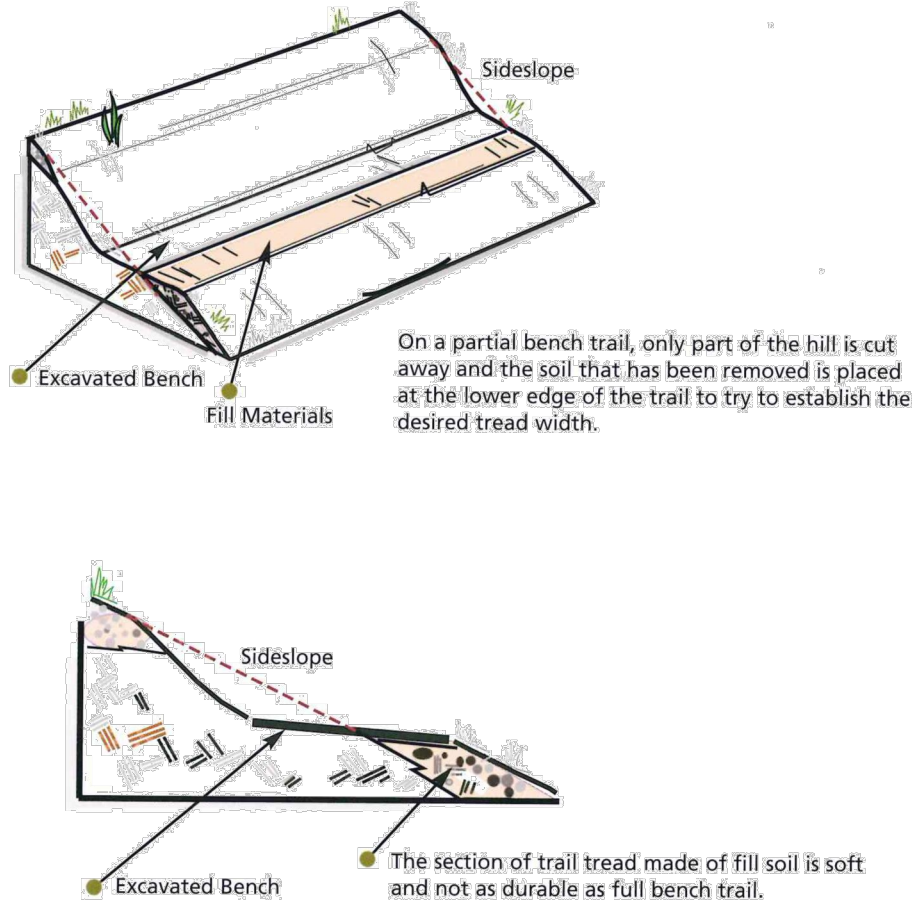
UNSEEDED TREATMENT AREAS SHALL BE MULCHED WITH WOOD CHIPS SPREAD IN A UNIFORM 6 TO 8 INCH LAYER.

Full Bench Trail



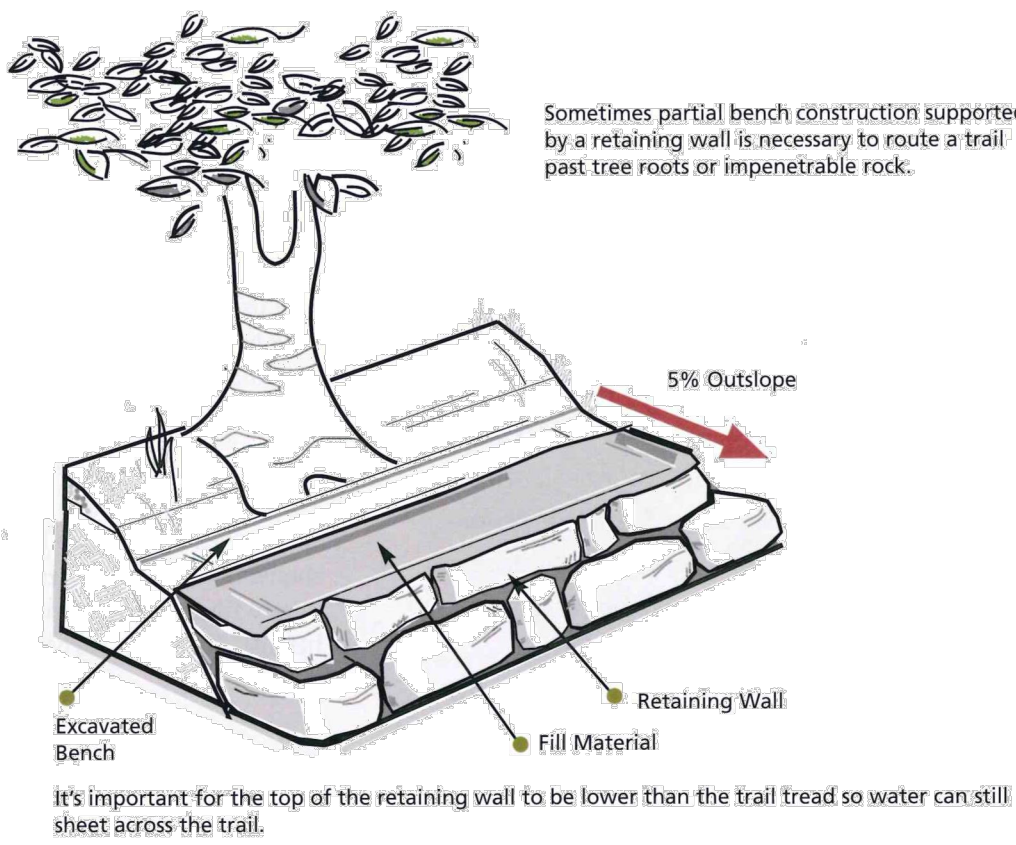
FULL BENCH TRAIL
NO SCALE

Partial Bench Trail



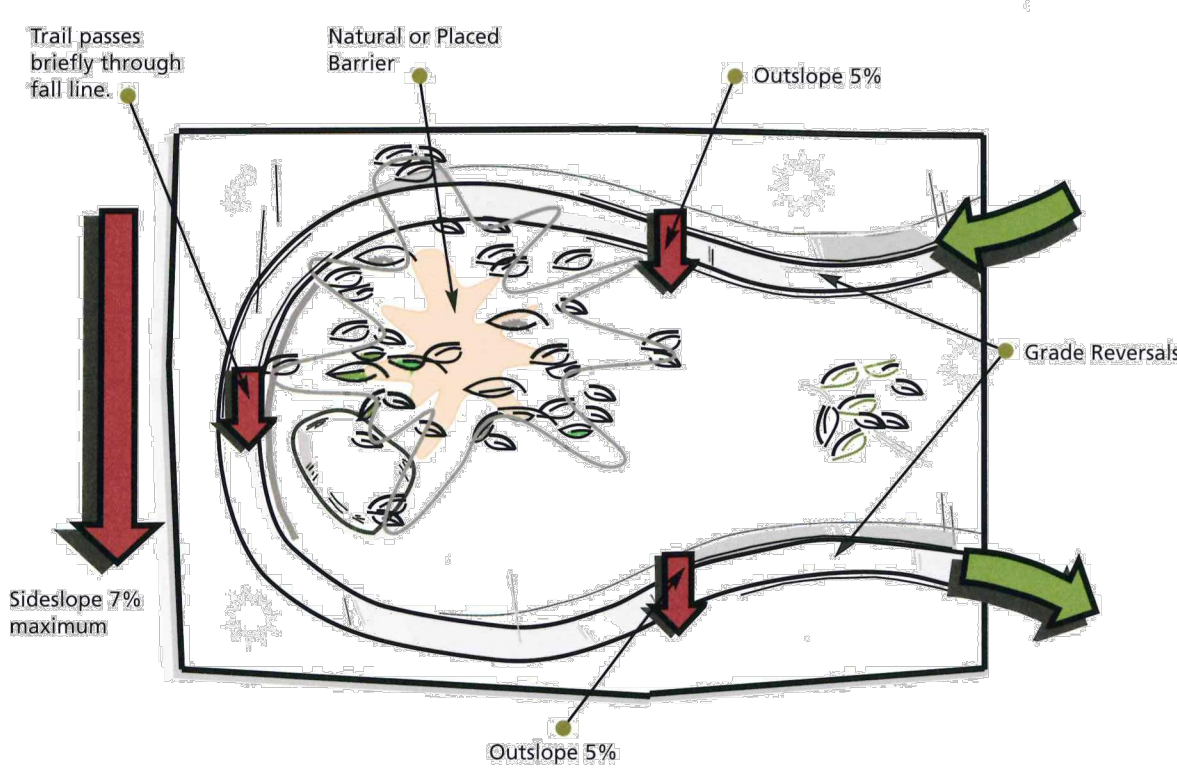
PARTIAL BENCH TRAIL
NO SCALE

Partial Bench Trail with Retaining Wall



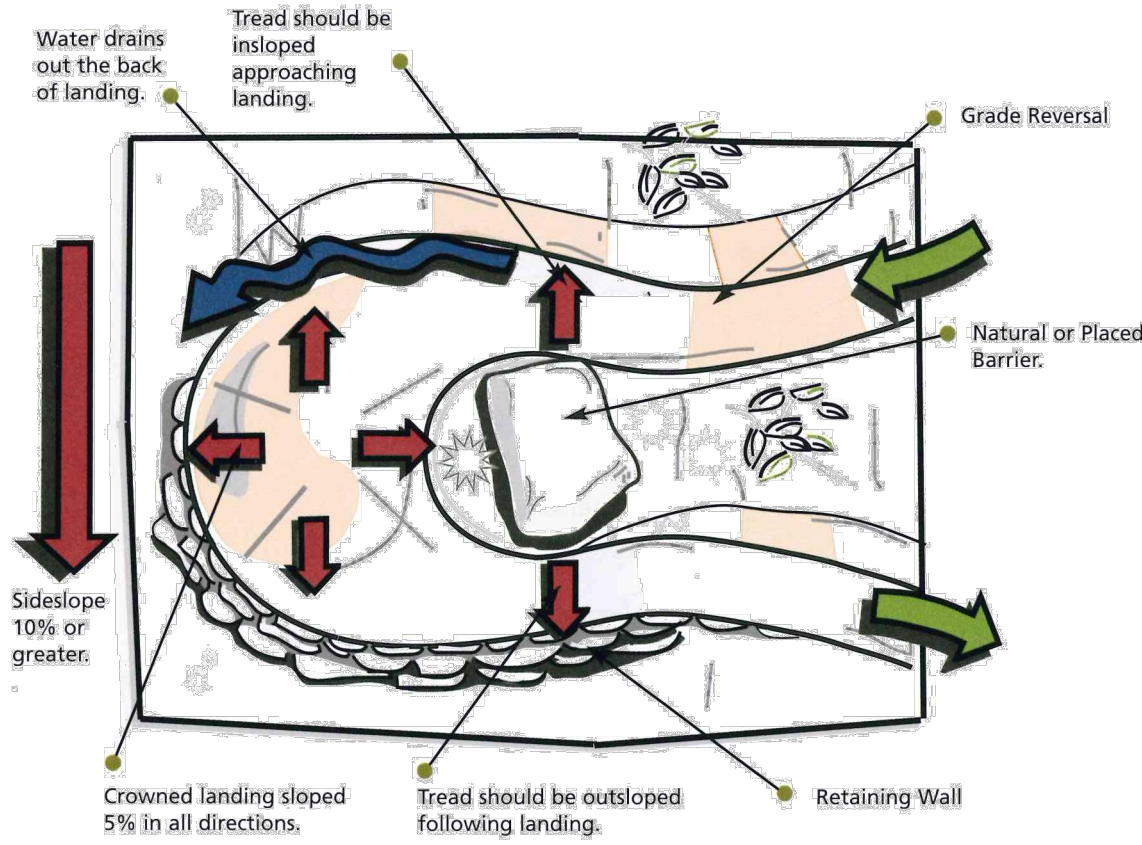
PARTIAL BENCH TRAIL
WITH RETAINING WALL
NO SCALE

Climbing Turn



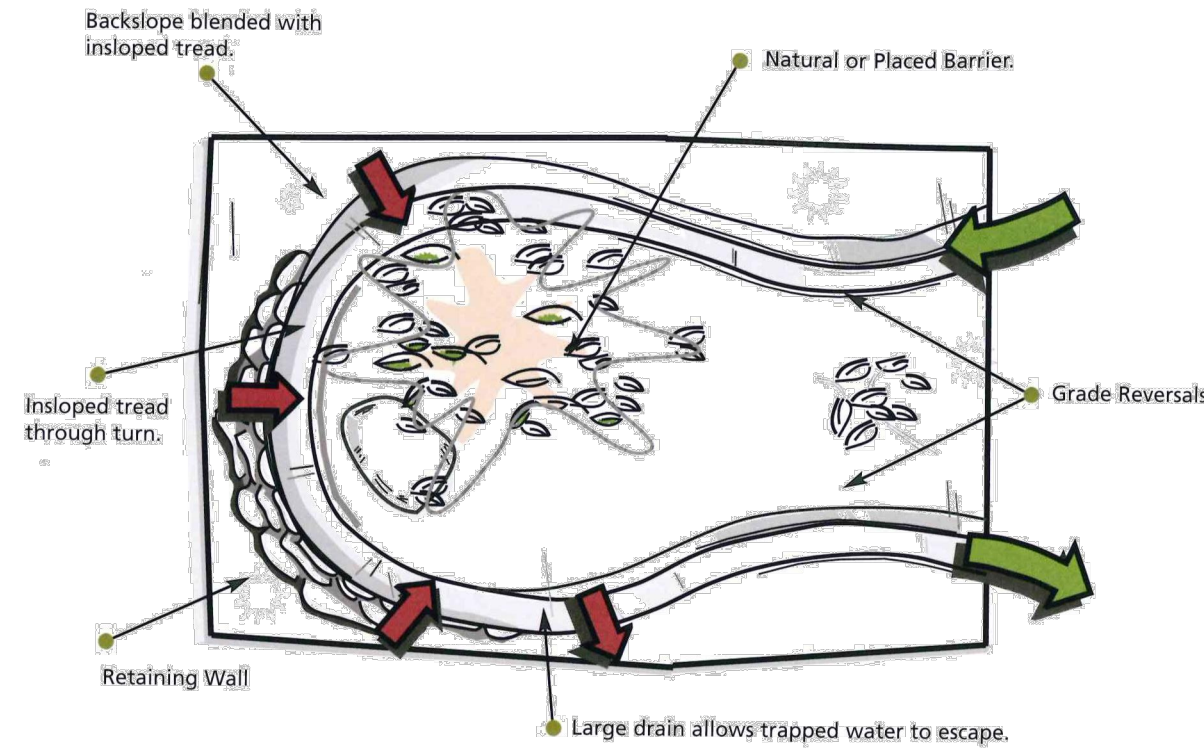
CLIMBING TURN
NO SCALE

Rolling Crown Switchback



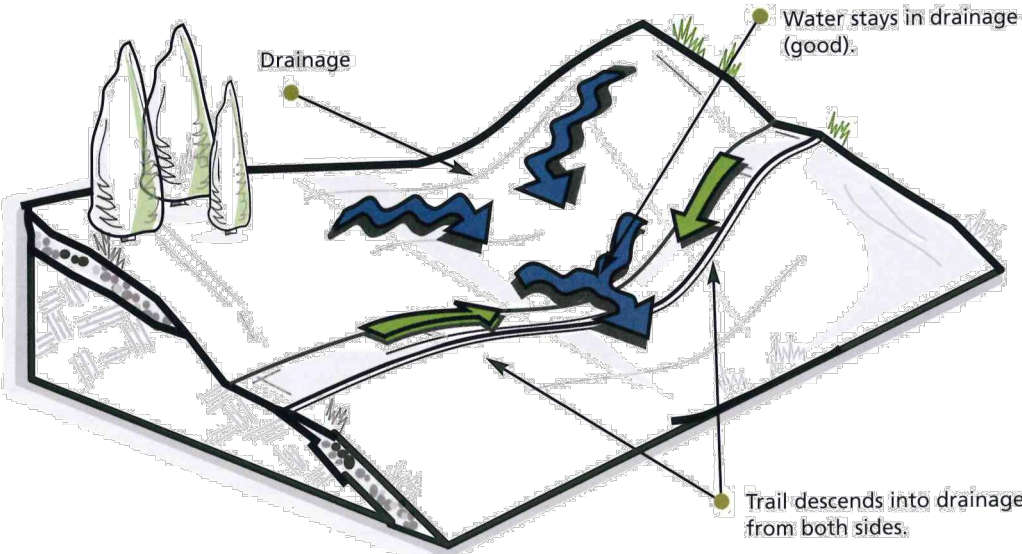
ROLLING CROWN SWITCHBACK
NO SCALE

Insloped Turn



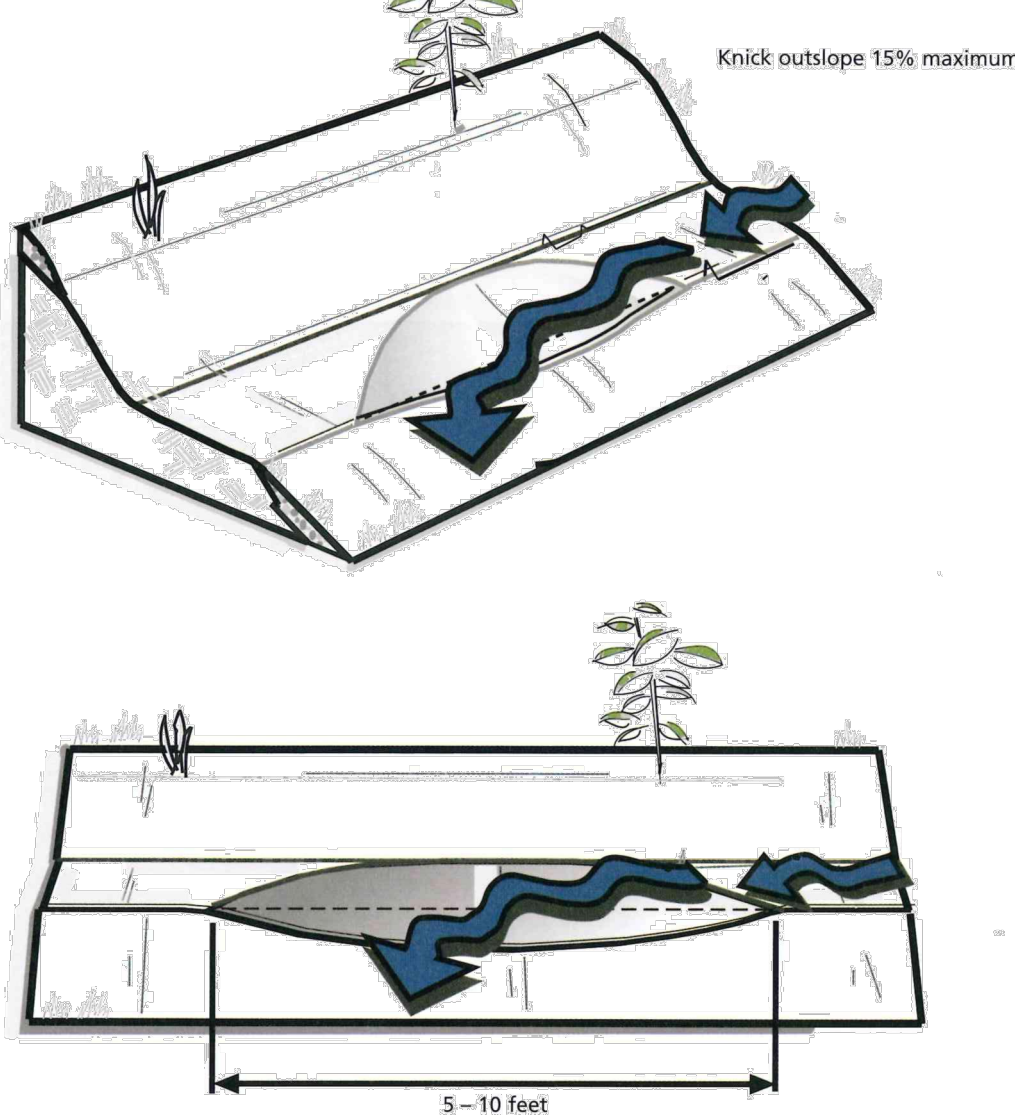
INSLOPED TURN
NO SCALE

Proper Drainage Crossing



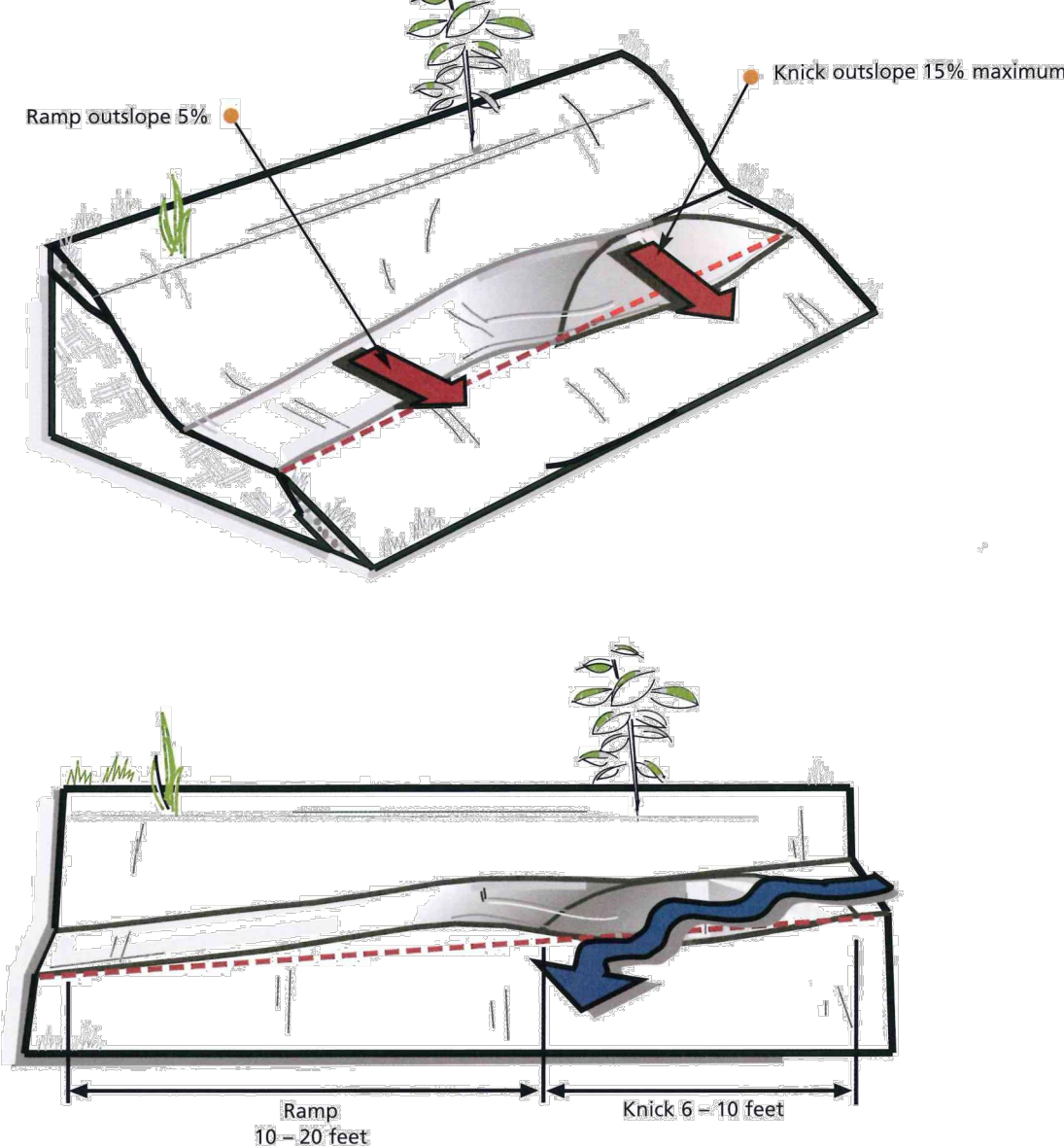
PROPER DRAINAGE CROSSING
NO SCALE

Knick



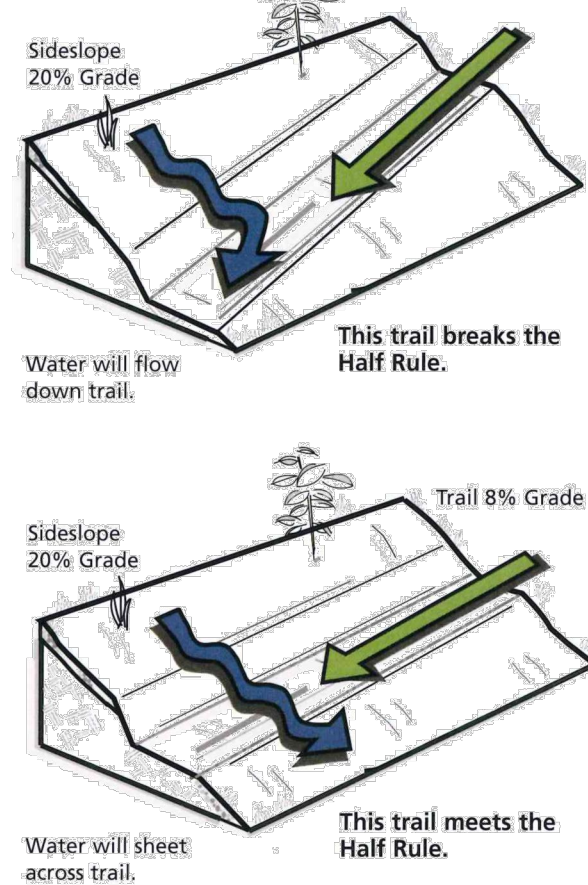
KNICKS
NO SCALE

Rolling Grade Dip

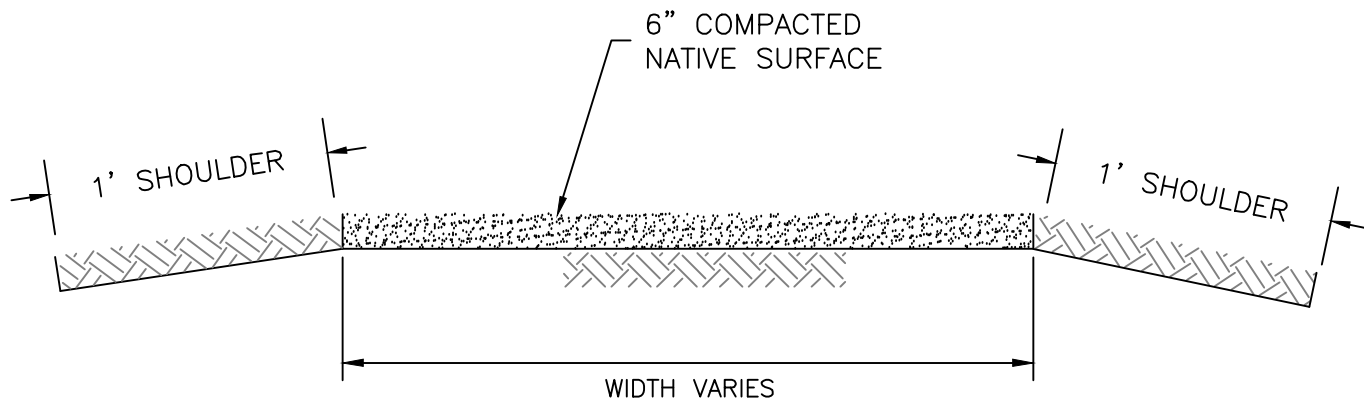


ROLLING GRADE DIP
NO SCALE

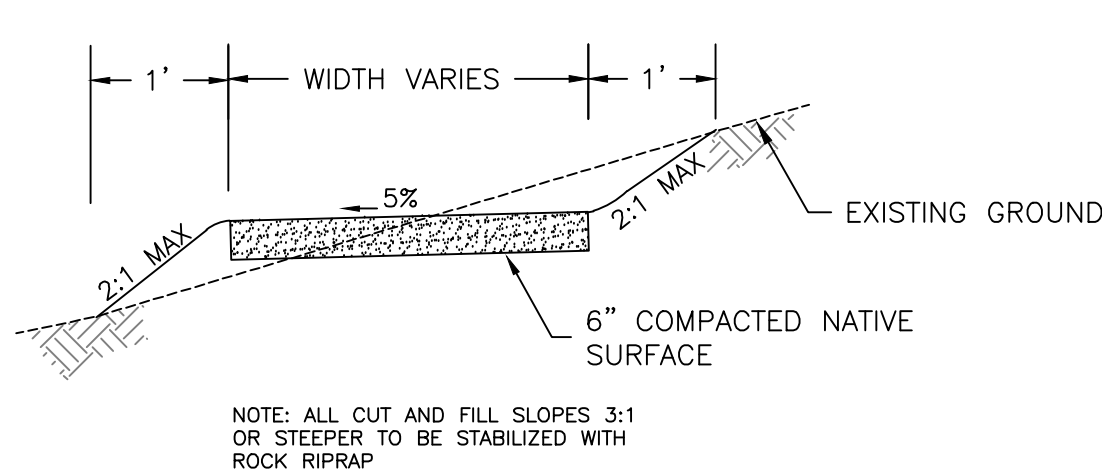
Half Rule



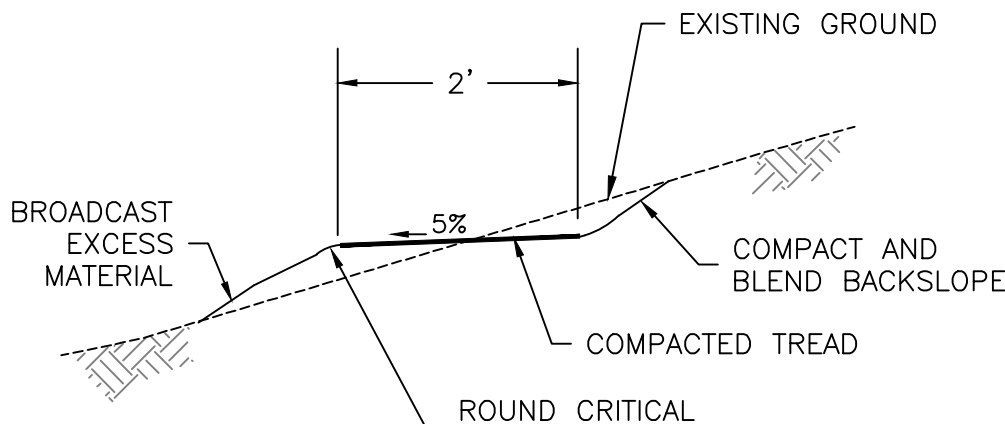
HALF RULE
NO SCALE



BEGINNER AND INTERMEDIATE
MOUNTAIN BIKE TRAIL CROSS-SECTION
AT GRADE CONSTRUCTION
NO SCALE



INTERMEDIATE AND ADVANCED
MOUNTAIN BIKE TRAIL CROSS-SECTION
CUT/FILL CONSTRUCTION
NO SCALE

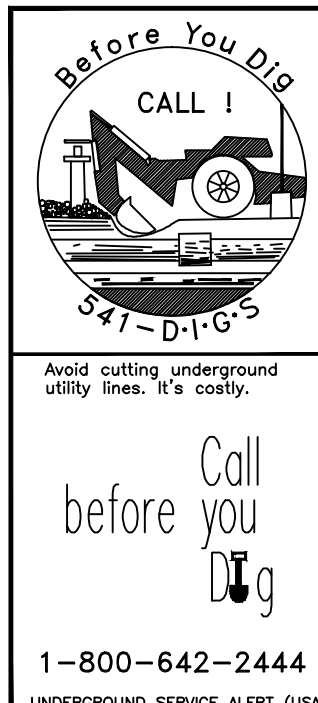


ADVANCED
MOUNTAIN BIKE TRAIL CROSS-SECTION
CONSTRUCTED WITH HAND TOOLS
NO SCALE

NOTES:

1. SCHEMATIC DETAILS OBTAINED FROM "TRAIL SOLUTIONS, IMBA'S GUIDE TO BUILDING SWEET SINGLE TRACK", 2004, PUBLISHED BY THE INTERNATIONAL MOUNTAIN BIKING ASSOCIATION.
2. TRAIL CONSTRUCTION SHALL ADHERE TO U.S. FOREST SERVICE - REGION 6, U.S. CUSTOMARY SPECIFICATION FOR CONSTRUCTION AND MAINTENANCE OF TRAILS, PACIFIC NORTHWEST REGION, DATED JULY 2005.
3. STACKED SWITCHBACKS SHALL BE MINIMIZED TO PREVENT RUNOFF AND EROSION ALONG BIKE TRAILS.
4. MOUNTAIN BIKE TRAILS SHOULD BE CONSTRUCTED WITH A MAXIMUM AVERAGE SLOPE OF 7%.
5. TRAIL DESIGN IS CONCEPTUAL AND BASED ON THE BEST INFORMATION AVAILABLE. TRAIL ALIGNMENT, GRADE, BERMS, AND FEATURES MAY BE MODIFIED AND "FIELD FIT" TO THE TERRAIN DURING CONSTRUCTION FOR CONSIDERATION OF EROSION CONTROL, SHORT-CUT PREVENTION, AND GUEST EXPERIENCE. BIKE TRAIL ALIGNMENT WILL BE FIELD FIT TO ENSURE BIKE TRAILS DO NOT INTERFERE WITH WINTER OPERATIONS.

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REVISION	DATE

JOB NO.:	12-602.7
DATE:	03/04/14
DESIGNED:	MMG
DRAWN:	MLM/FRB
CHECKED:	MMG

SKY MEADOWS BASIN EPIC DISCOVERY ACTIVITIES

HEAVENLY MOUNTAIN RESORT
EL DORADO COUNTY, CALIFORNIA
APN 030-020-01

DOUGLAS COUNTY, NEVADA
APN 1318-00-002-010

STANDARD ABBREVIATIONS

A.C.	ASPHALTIC CONCRETE	I.E.	INVERT ELEVATION
@	AT	IMPROV.	IMPROVEMENT
AGG.	AGGREGATE	L.F.	LINEAR FEET
APPROX.	APPROXIMATE	M.H.	MANHOLE
BLDG.	BUILDING	MAX.	MAXIMUM
BLVD	BOULEVARD	MIN.	MINIMUM
BM	BENCH MARK	MON.	MONUMENT
C.B.	CATCH BASIN	NTS	NOT TO SCALE
C & G	CURB AND GUTTER	O.G.	ORIGINAL GROUND
CL	CENTERLINE	P.C.C.	PORTLAND CONCRETE CEMENT
CMP	CORRUGATED METAL PIPE	PE	POLYETHYLENE
CO	CLEAN OUT	PL	PROPERTY LINE
CONC.	CONCRETE	PP	POWER POLE
CULV.	CULVERT	RCP	REINFORCED CONCRETE PIPE
C.Y.	CUBIC YARDS	S.F.	SQUARE FEET
D.I.	DROP INLET	SD	STORM DRAIN
DIA.	DIAMETER	SDMH	STORM DRAIN MANHOLE
DR	DRIVE	SHT.	SHEET
E	ELECTRIC	SS	SANITARY SEWER
EL., ELEV.	ELEVATION	SSCO	SANITARY SEWER CLEANOUT
EXIST., EX.	EXISTING	SSMH	SANITARY SEWER MANHOLE
FG	FINISH GRADE	STD.	STANDARD
F.H.	FIRE HYDRANT	TELE.	TELEPHONE
FL	FLOWLINE	TYP.	TYPICAL
FND.	FOUND	UTIL.	UTILITY
G	GAS	W	WATER

Project Coverage Table (Rev. 02-27-14)						
New Coverage	Existing 1a	Proposed 1a	Net Change	Existing 1b	Proposed 1b	Net Change
Sky Meadows Basin Epic Discoveries						
Sky Basin Zip Line						
Paths and Queuing Areas		24,150	24,150		168	168
Sky Meadows Challenge Course						
Paths		138	138		604	604
Mountain Excursion Tour						
Parking/Pullouts		440	440			
Ridge Run Lookout Tower						
Structures		992	992			
Parking/Pullouts		440	440			
Paths		656	656			
Total Sky Meadows Basin Epic Discoveries	-	26,816	26,816	-	772	772
Total Coverage	0	26,816	26,816	0	772	772

Coverage Summary Table			
Maximum Allowable Coverage (per Master Plan)	1a	1b	Total
Maximum Allowable Coverage per Master Plan			2,053,854
Balance Remaining of Coverage and Banked Coverage per Table 3.4-4 of the Final EIR/EIS/EIS ¹	434,580	4,464	439,044
Project Subtotals			
Northbowl/Olympic Express Lifts Project Balances	960	396	1,356
Gondola Hiking trails	54,501	0	54,501
Mid Station Road	50,469	0	50,469
Northbowl/Olympic Express Lifts - Plan Revision	216	0	216
World Cup/East Bowl Snowmaking - Plan Revision	283	0	283
Calif. Base Surface Lift Replacement	1,572	0	1,572
Skyline Trail Grading and Snowmaking	1,134	0	1,134
Top of the Gondola Lodge	42,387	0	42,387
Adjusted Gondola Permit Coverage	-27,519	0	-27,519
Umbrella Bar Relocation	651	0	651
Covered Surface Lift and Snowmaking	10,039	0	10,039
California Side Trail Widening	0	0	0
Adventure Peak Improvements	6,207	0	6,207
Zipline Adventure Ride	4,916	0	4,916
Verizon Angel's Roost Cell Tower and Back-up Bldg	584	0	584
Epic Race Course Electrical	0	0	0
Summer Activities	22,213	0	22,213
Tamarack Lodge Modifications	537	0	537
Adventure Peak Epic Discoveries	58,154	0	58,154
Removal of Gondola Hiking Trails	-54,501	0	-54,501
East Peak Basin Epic Discoveries	1,210	0	1,210
Sky Meadows Basin Epic Discoveries	26,816	772	27,588
Subtotals	200,829	1,168	201,997
Balance Remaining Upon Project Completion	233,751	3,296	237,047

1. Includes 10,541 square feet of existing coverage attributed to Sky Deck



LOCATION MAP

SHEET INDEX

SHEET 1	TITLE SHEET
SHEET 2	SITE PLAN AND SHEET INDEX
SHEET 3	SKY BASIN ZIP TOUR
SHEET 4	SKY MEADOWS CHALLENGE COURSE
SHEET 5	RIDGE RUN LOOKOUT TOWER
SHEET 6	MOUNTAIN EXCURSION TOUR
SHEET 7	DETAILS

SKY BASIN ZIP TOUR

SHEET A0	COVER SHEET
SHEET A1	ISOMETRIC VIEW
SHEET A2	ELEVATIONS
SHEET A3	3D VIEWS
SHEET A4	SAFETY ENVELOPE
SHEET C1	SITE PLAN
SHEET C2	CATENARY ANALYSIS

SKY MEADOWS CHALLENGE COURSE

SHEET A0	COVER SHEET
SHEET A1	PLANS AND ELEVATIONS
SHEET A2.1.1	6' PLATFORM - COMPONENT DETAILS
SHEET A2.2.1	10' PLATFORM - COMPONENT DETAILS
SHEET A4	SKY BRIDGE DETAILS
SHEET A6	REPRESENTATIVE IMAGES
SHEET PR1	PROGRAMMING & FACILITATION

RIDGE RUN LOOKOUT TOWER

SHEET A0	COVER SHEET
SHEET A1	ISOMETRIC VIEW
SHEET A2	ELEVATION
SHEET A3	3D VIEWS
SHEET C1	SITE PLAN

OWNER

HEAVENLY MOUNTAIN RESORT
P.O. BOX 2180
STATELINE, NV 89449
(775) 586-7000

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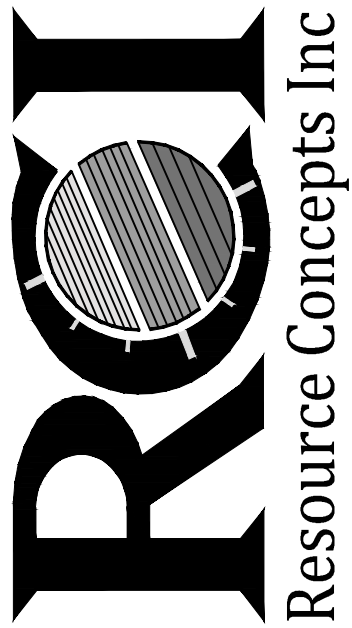


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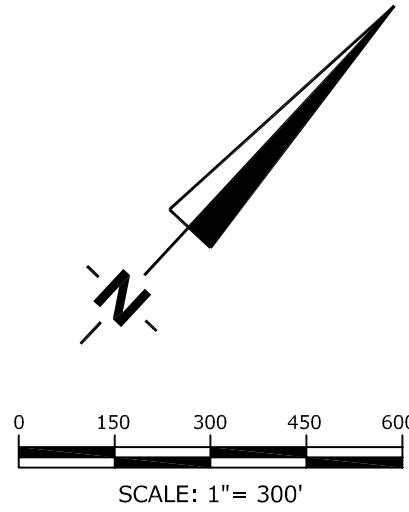
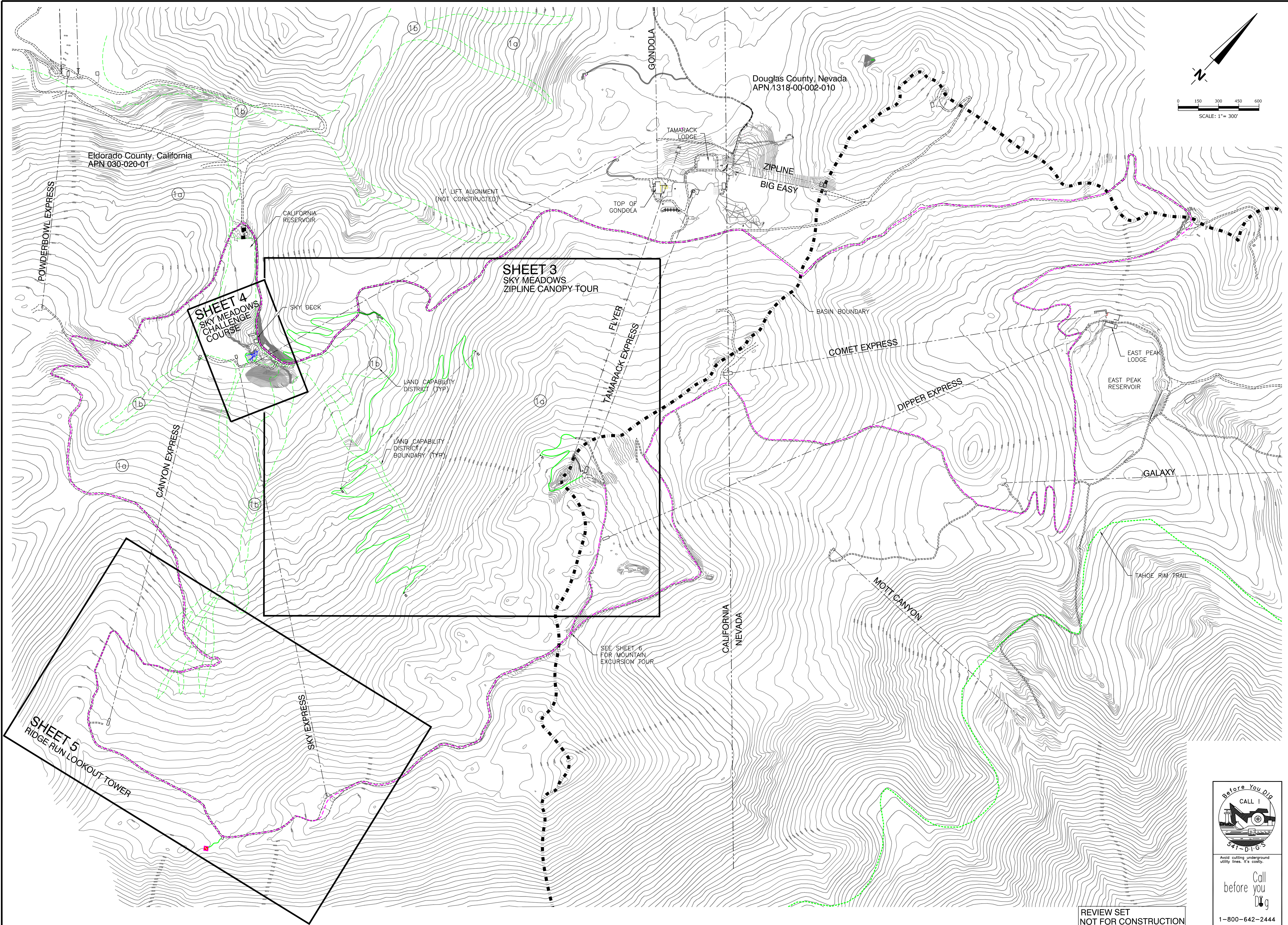


DATE	REVISION

HEAVENLY MOUNTAIN RESORT
Sky Meadows Basin Epic Discovery Activities

TITLE SHEET

JOB NO.:	12-602.7
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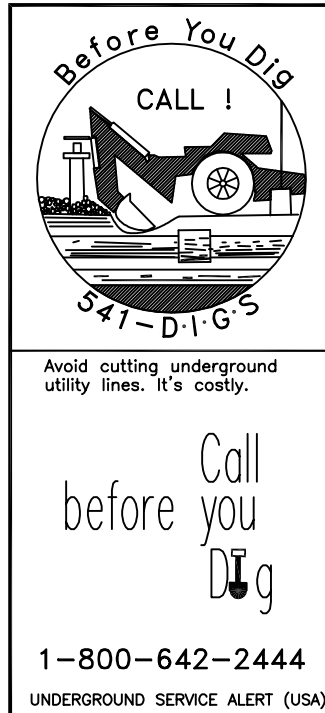
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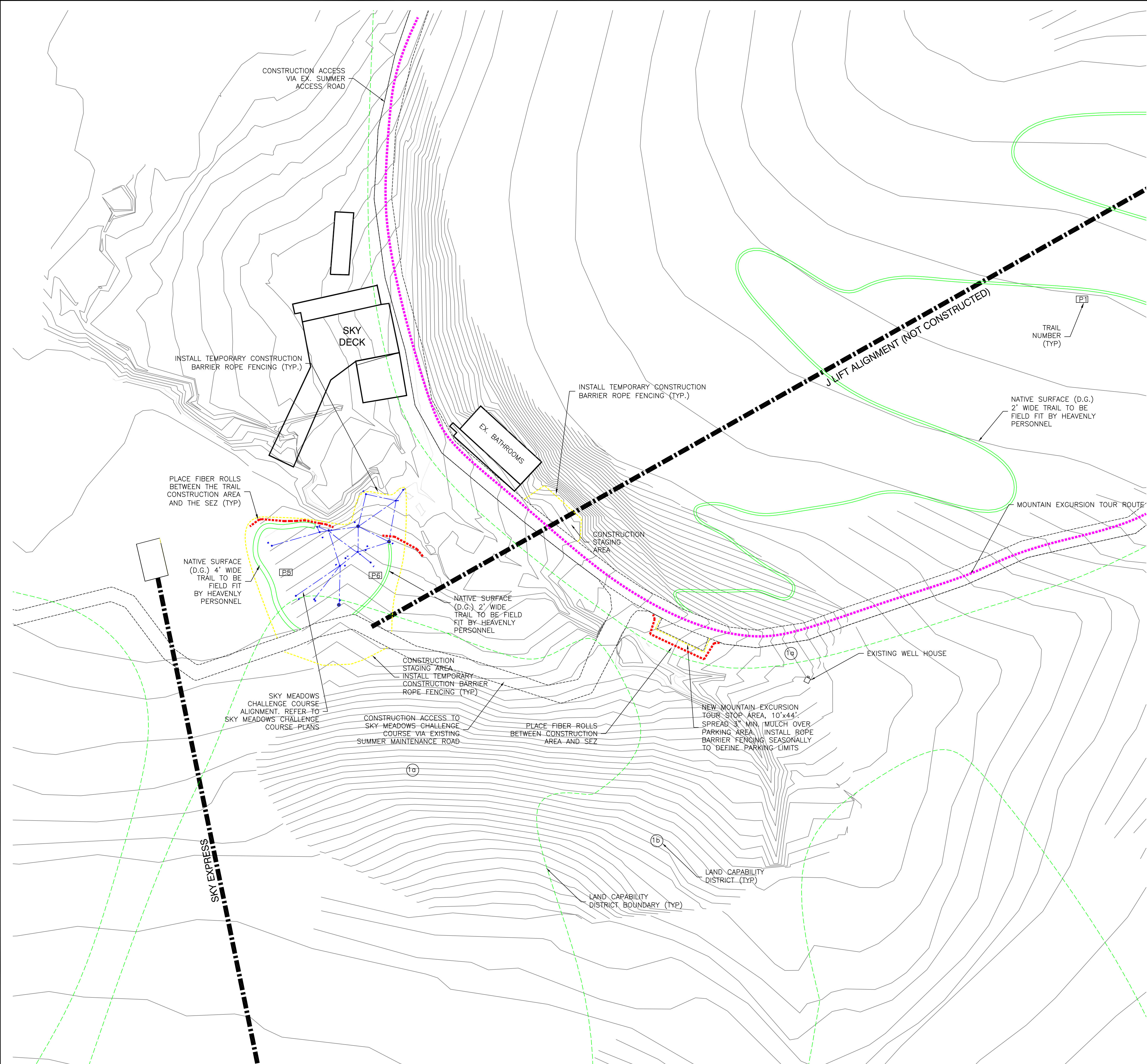
HEAVENLY MOUNTAIN RESORT
Sky Meadows Basin Epic Discovery Activities

SITE PLAN AND SHEET INDEX



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DATE:	1/29/14
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- LEGEND:
- PUBLIC HIKING TRAILS
 - ADMINISTRATIVE MAINTENANCE TRAILS

- NOTES:
- ALL TRAILS SHALL BE AT GRADE, NATIVE MATERIAL TRAILS THAT ARE FIELD FIT TO MINIMIZE REMOVAL OF VEGETATION AND UTILIZE THE NATURAL TOPOGRAPHY TO MINIMIZE GRADES.
 - STACKED SWITCHBACKS SHALL BE MINIMIZED TO THE EXTENT POSSIBLE.
 - FORMER ROADWAY PRISMS SHALL BE UTILIZED WHERE PRACTICABLE FOR NEW TRAIL ALIGNMENTS.
 - ALL TRAIL CONSTRUCTION CORRIDORS OUTSIDE OF THE TRAIL ITSELF SHALL BE REVEGETATED PER THE REVEGETATION SPECIFICATIONS INCLUDED IN THESE PLANS.

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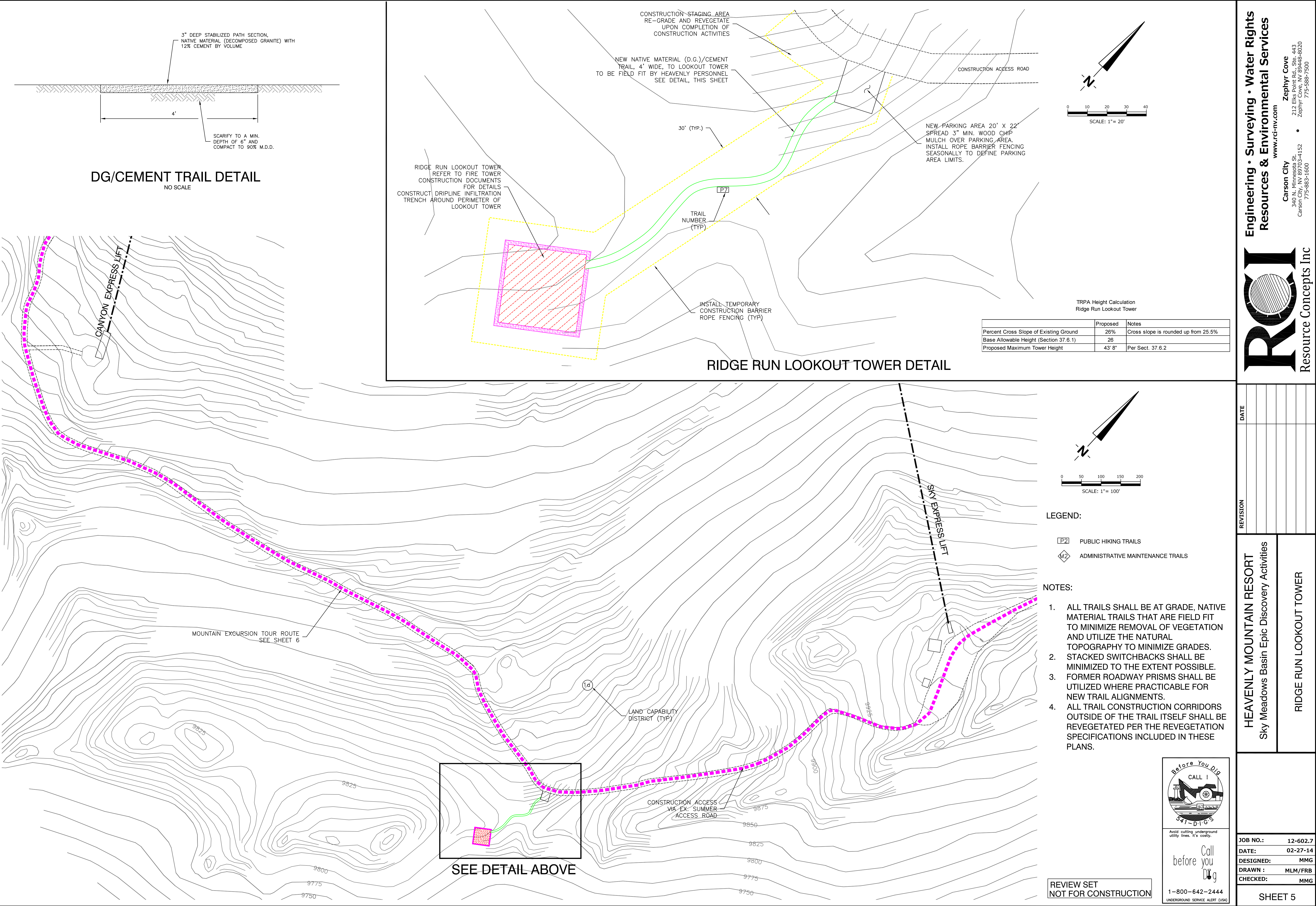
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HEAVENLY MOUNTAIN RESORT
Sky Meadows Basin Epic Discovery Activities

SKY MEADOWS CHALLENGE COURSE

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DRAWN : MLM/FRB
CHECKED: MMG

SHEET 4



DG/CEMENT TRAIL DETAIL
NO SCALE

RIDGE RUN LOOKOUT TOWER DETAIL

	Proposed	Notes
Percent Cross Slope of Existing Ground	26%	Cross slope is rounded up from 25.5%
Base Allowable Height (Section 37.6.1)	26	
Proposed Maximum Tower Height	43' 8"	Per Sect. 37.6.2

LEGEND:

- P2 PUBLIC HIKING TRAILS
- M2 ADMINISTRATIVE MAINTENANCE TRAILS

NOTES:

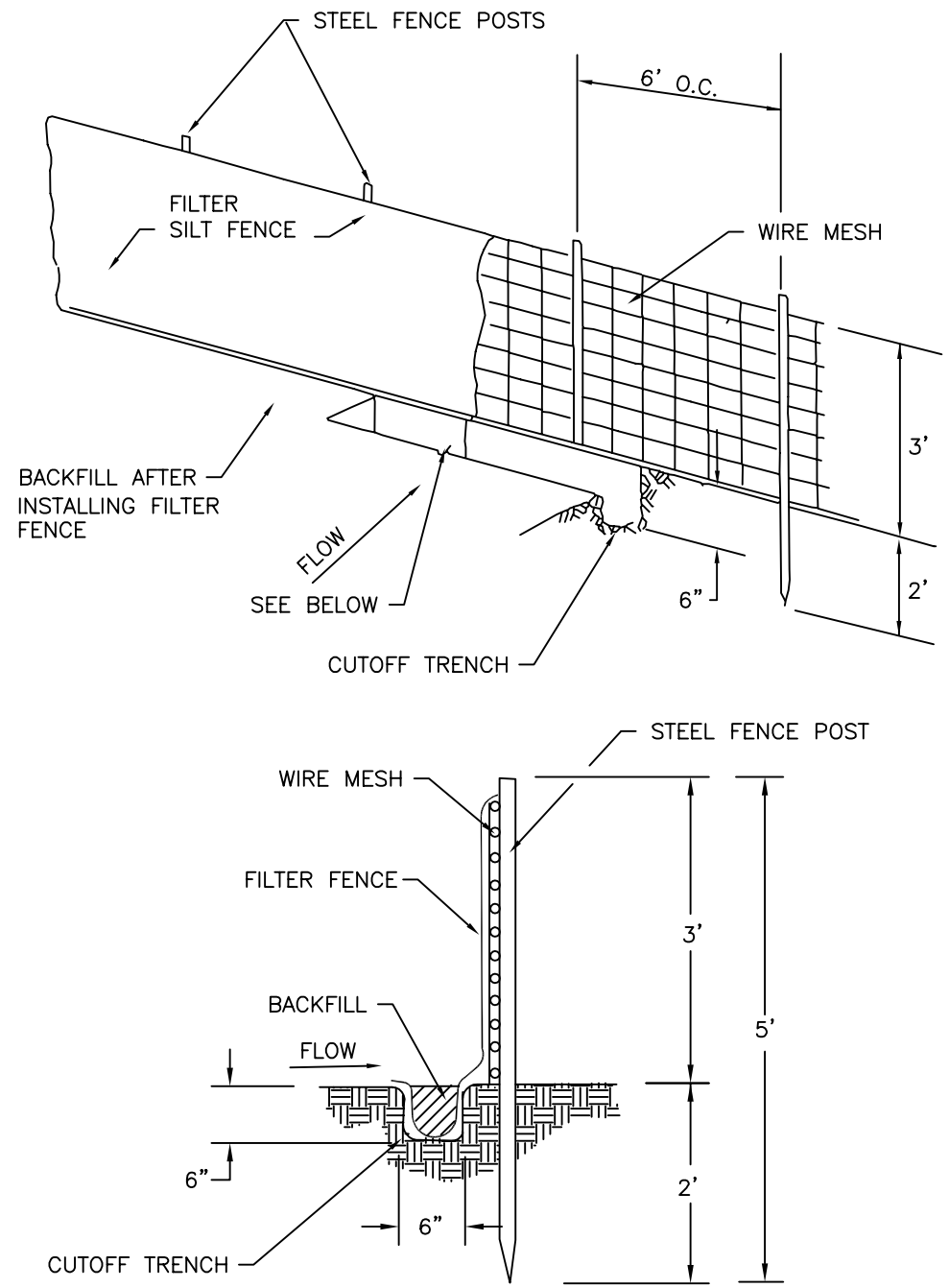
- ALL TRAILS SHALL BE AT GRADE, NATIVE MATERIAL TRAILS THAT ARE FIELD FIT TO MINIMIZE REMOVAL OF VEGETATION AND UTILIZE THE NATURAL TOPOGRAPHY TO MINIMIZE GRADES.
- STACKED SWITCHBACKS SHALL BE MINIMIZED TO THE EXTENT POSSIBLE.
- FORMER ROADWAY PRISMS SHALL BE UTILIZED WHERE PRACTICABLE FOR NEW TRAIL ALIGNMENTS.
- ALL TRAIL CONSTRUCTION CORRIDORS OUTSIDE OF THE TRAIL ITSELF SHALL BE REVEGETATED PER THE REVEGETATION SPECIFICATIONS INCLUDED IN THESE PLANS.

REVISION	DATE

Before You Dig
CALL 1-800-4-A-DIG
541-DIG-5
Avoid cutting underground utility lines. It's costly.
before you Dig
1-800-642-2444
UNDERGROUND SERVICE ALERT (USA)

REVIEW SET
NOT FOR CONSTRUCTION

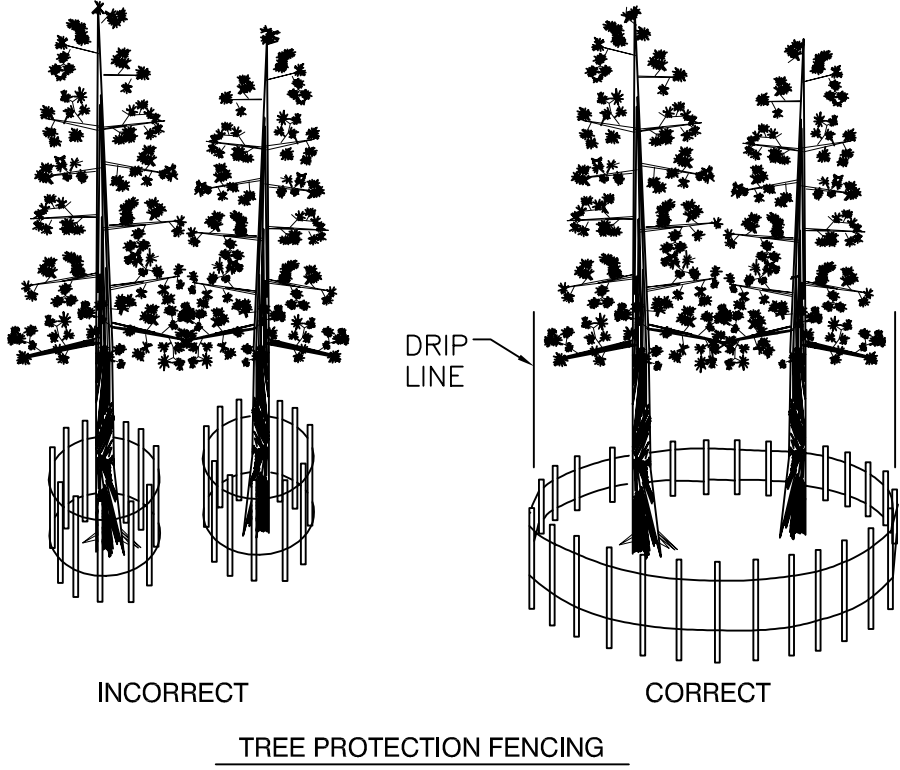
JOB NO.:	12-602.7
DATE:	02-27-14
DESIGNED:	MMG
DRAWN :	MLM/FRB
CHECKED:	MMG



- NOTES:
1. THE CONTRACTOR MAY USE MANUFACTURED FILTER FENCING IN LIEU OF THE ABOVE, SUBJECT TO SUBMITTAL OF MANUFACTURER'S DATA SHEETS TO THE ENGINEER FOR APPROVAL.
 2. WIRE MESH CAN BE DELETED IF POST SPACING IS REDUCED TO 4-FOOT O.C.
 3. ENDS OF RUN OF FILTER FENCE SHALL BE TURNED UPHILL TO FORM A 'J'.

TEMPORARY EROSION CONTROL TYPICAL FILTER FENCE

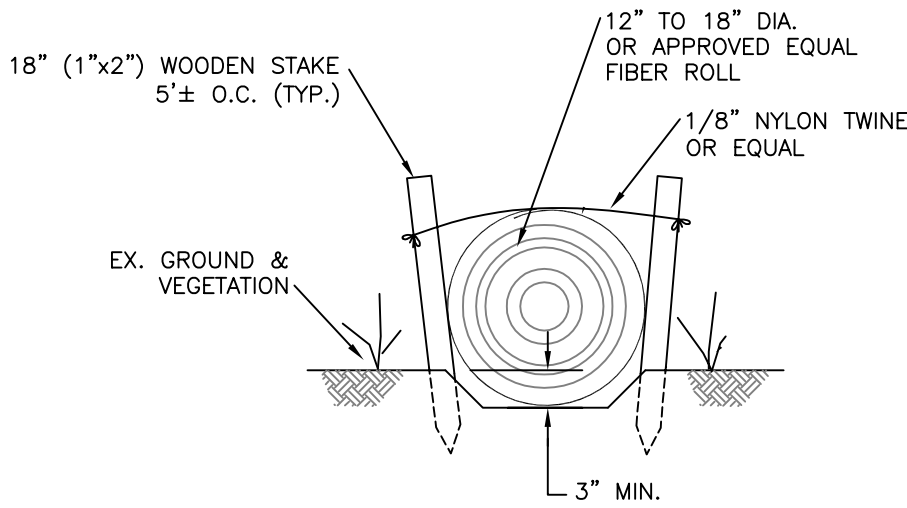
NO SCALE



- NOTE:
1. TEMPORARY FENCING TO BE A MINIMUM OF 4' HIGH.
 2. POSTS TO BE SET AT A MINIMUM OF 6' ON CENTERLINE FROM EACH OTHER.
 3. FENCING MATERIALS TO BE APPROVED BY THE ENGINEER.

TEMPORARY EROSION CONTROL TREE PROTECTION DETAIL

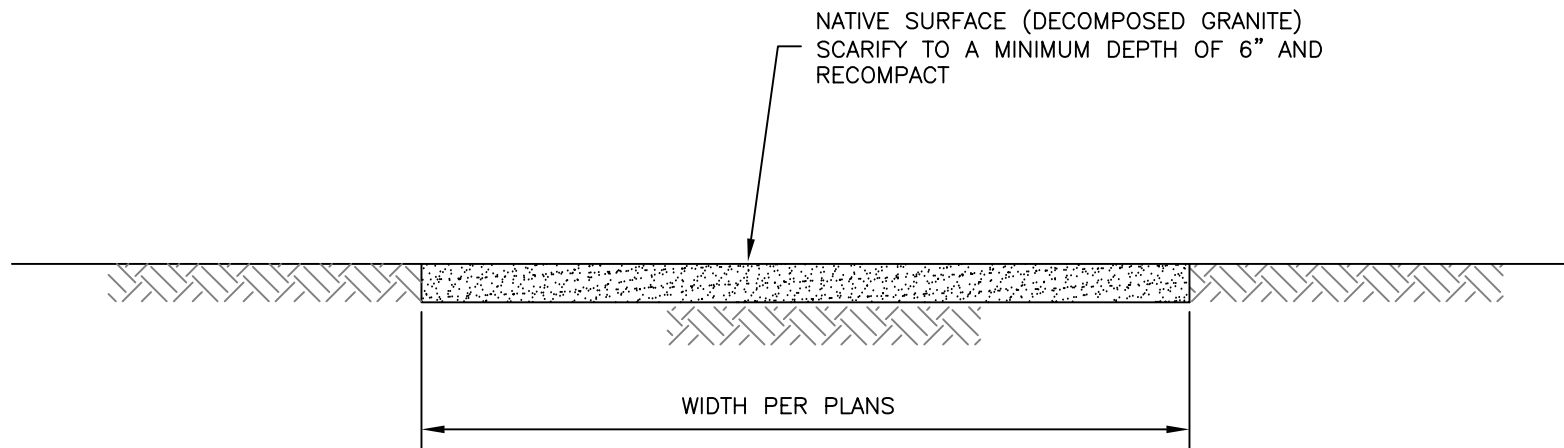
NO SCALE



- NOTES:
1. FIBER ROLL INSTALLATION REQUIRES THE PLACEMENT AND SECURE STAKING OF THE ROLL IN A TRENCH, 3" TO 6" DEEP, DUG ON CONTOUR. RUNOFF MUST NOT BE ALLOWED TO RUN UNDER OR AROUND ROLL.
 2. INSTALL IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
 3. FIBER MATERIAL SHALL BE BIODEGRADABLE WEED-FREE STRAW, JUTE, COIR, OR EXCELSIOR. MATERIALS REQUIRE TRPA AND U.S. FOREST SERVICE APPROVAL PRIOR TO INSTALLATION.

TEMPORARY SEDIMENT BARRIER FIBER ROLLS

NO SCALE



NATIVE SURFACE (DG) TRAIL DETAIL

NO SCALE

EROSION CONTROL NOTES

1. FOR ALL USE OF THE STAGING AREAS WHEN SNOW COVER IS NOT PRESENT, HEAVENLY SHALL HAVE ALL TEMPORARY EROSION CONTROL MEASURES IN PLACE AND APPROVED BY TRPA. HEAVENLY SHALL INCORPORATE ADEQUATE DRAINAGE PROCEDURES DURING THE CONSTRUCTION PROCESS TO ELIMINATE EXCESSIVE PONDING AND/OR EROSION. AFTER A RAINSTORM, ALL SILT AND DEBRIS MUST BE REMOVED FROM CHECK BERMS AND DESILTING FACILITIES, AND ANY DAMAGED EROSION CONTROL MEASURES MUST BE REPAIRED.
2. AN ONSITE INSPECTION BY TRPA STAFF IS REQUIRED PRIOR TO ANY CONSTRUCTION OR GRADING ACTIVITY. TRPA STAFF SHALL DETERMINE IF THE ONSITE CONSTRUCTION TEMPORARY EROSION CONTROL MEASURES HAVE BEEN PROPERLY INSTALLED. NO GRADING OR CONSTRUCTION SHALL COMMENCE UNTIL TRPA PRE-GRADE CONDITIONS OF APPROVAL ARE MET.
3. HEAVENLY SHALL BE RESPONSIBLE TO INSTALL AND MAINTAIN ALL CONSTRUCTION BMPS TO ENSURE PROPER WORKING CONDITIONS. ROADS USED DURING CONSTRUCTION WILL BE INSPECTED DAILY BY HEAVENLY FOR DRAINAGE AND GRADING. RUTS WILL BE REPAIRED IMMEDIATELY. WATERBARS, CULVERTS, AND DITCHES (DRAINAGE STRUCTURES) WILL BE MAINTAINED ON A DAILY BASIS DURING CONSTRUCTION.
4. SEDIMENT BARRIERS AND CONSTRUCTION LIMIT FENCING WILL BE INSPECTED DAILY DURING CONSTRUCTION BY THE HEAVENLY FOR DAMAGE AND APPROPRIATE PLACEMENT. SEDIMENT BARRIERS SHALL BE REPAIRED AND/OR RELOCATED AS NEEDED ON A DAILY BASIS.
5. TEMPORARY BMP MEASURES SHALL BE IMPLEMENTED FOR ALL PROJECT LOCATIONS.
6. EXCAVATION SHALL NOT EXCEED 5-FEET BELOW GROUND SURFACE.
7. DISTURBED AREAS, ROADWAYS, AND STAGING AREAS USED DURING CONSTRUCTION SHALL BE SWEEPED AND /OR PROVIDED WITH DUST ABATEMENT SUCH AS A WATER TRUCK AS NEEDED.
8. FOR ALL NATIVE TREES TO REMAIN, TEMPORARY CONSTRUCTION FENCE SHALL BE INSTALLED AROUND THE DRIPLINE OF ALL TREES ADJACENT TO THE ROAD AND WORK AREAS, WHERE FEASIBLE, OR OTHER MEASURES DEEMED APPROPRIATE BY THE TRPA INSPECTOR.
9. HEAVENLY SHALL BE RESPONSIBLE FOR MAINTAINING THE SITE IN A NEAT AND ORDERLY MANNER THROUGHOUT THE CONSTRUCTION PROCESS.
10. TURNING OR MANEUVERING OF BACKHOE, EXCAVATOR OR OTHER EQUIPMENT WILL BE MINIMIZED TO REDUCE SOIL DISTURBANCE.
11. ALL BARREN AREAS AND AREAS DISTURBED BY CONSTRUCTION SHALL BE REVEGETATED IN ACCORDANCE WITH THE TRPA HANDBOOK OF BEST MANAGEMENT PRACTICES. APPLICATION OF A MULCH MAY ENHANCE VEGETATIVE ESTABLISHMENT.

REVEGETATION SPECIFICATIONS

PART 1. GENERAL

ALL AREAS DISTURBED DURING CONSTRUCTION OTHER THAN EXISTING ACCESS ROADS, INCLUDING ACCESS CORRIDORS, STORAGE AREAS, STAGING AREAS, AND CONSTRUCTION AREAS SHALL BE STABILIZED ACCORDING TO THESE SPECIFICATIONS. UPON COMPLETION OF GRADING AND CONSTRUCTION, AND PRIOR TO REVEGETATION, ALL AREAS TO BE REVEGETATED WILL BE INSPECTED BY THE ENGINEER'S REVEGETATION SPECIALIST (RS). THE CONTRACTOR SHALL NOTIFY THE ENGINEER AT LEAST FIVE WORKING DAYS PRIOR TO PLANTING TO SCHEDULE THE REQUIRED INSPECTION. FINAL SEEDING AND MULCH TREATMENT AREAS WILL BE STAKED IN THE FIELD AT THAT TIME. REVEGETATION TREATMENTS PERFORMED BY AN OUTSIDE CONTRACTOR SHALL NOT BE INITIATED WITHOUT THE APPROVAL OF THE ENGINEER. REVEGETATION PERFORMED BY HEAVENLY PERSONNEL NEED NOT BE APPROVED BY THE ENGINEER OR THE REVEGETATION SPECIALIST PRIOR TO INITIATING REVEGETATION WORK.

STABILIZATION TREATMENTS SHALL BE INSTALLED AS PER THESE SPECIFICATIONS AND THE PLAN SHEETS AND SHALL CONSIST OF WOOD CHIP INCORPORATION INTO THE TOP 12 INCHES OF SOIL, SEEDING, AND PINE NEEDLE/WOOD CHIP MULCH APPLICATION.

PART 2. PRODUCTS AND EXECUTION OF TREATMENTS

SEED

SEED MIXTURES ARE SHOWN IN TABLE 1 ON THIS SHEET.

SEED SHALL BE CLEAN NEW CROP SEED, PURCHASED PREMIXED ON A PURE LIVE SEED (PLS) BASIS. SEED SHALL BE DELIVERED TO THE SITE IN ORIGINAL UNOPENED CONTAINERS BEARING THE DEALER'S GUARANTEED ANALYSIS AND GERMINATION PERCENTAGE, AND SHALL MEET THE STATE OF CALIFORNIA FREEDOM FROM NOXIOUS WEED REQUIREMENTS. NO SUBSTITUTIONS IN THE SEED MIXTURE WILL BE ACCEPTED WITHOUT WRITTEN APPROVAL FROM THE RS.

SEED LABELS SHALL BE REMOVED FROM THE SEED SACKS BY THE RS AT THE TIME OF SEEDING. SEED LABELS WILL INCLUDE DOCUMENTATION FOR EACH TYPE OF SEED CERTIFYING THAT A RECOGNIZED LABORATORY TESTED THE SEED WITHIN 6 MONTHS OF THE DATE OF DELIVERY.

Table 1. Seed Mix

Common Name Variety	Scientific Name	Seeding Rate Pure Live Seed Pounds Per Acre
Squirreltail (High elevation collection)	Elymus elymoides ssp. Elymoides (Sierra)	10
Mokelumne or El Dorado Brome (or other high elevation Tahoe collection)	Bromus carinatus (Mokelumne)	5
Western Needlegrass (or other high elevation Tahoe collection)	Achnatherum occidentale	3
Antelope Bitterbrush (+5500 ft. Sierra Collection)	Purshia tridentata	5
Sulfur-flower Buckwheat	Erigonum umbellatum	2
Total PLS Pounds Per Acre Rate		25

PART 2 (CONT.) PRODUCTS AND EXECUTION OF TREATMENTS

WOOD CHIPS

WOOD CHIPS SHALL BE PREPARED FROM TREES REMOVED DURING CONSTRUCTION AND MAINTENANCE ACTIVITIES ON HEAVENLY MOUNTAIN RESORT. TOPS AND BRANCHES OF TREES REMOVED ON THIS AND OTHER HEAVENLY MOUNTAIN RESORT PROJECT SITES WILL BE CHIPPED TO A MINIMUM DIAMETER OF 2 INCHES, AND A MAXIMUM LENGTH OF 6 INCHES.

PINE NEEDLES

PINE NEEDLES SALVAGED FROM THE CONSTRUCTION SITE CAN BE USED AS A MULCH MATERIAL. PINE NEEDLE MULCH SHALL BE WEED FREE AND CLEAN WITHOUT DEBRIS, OR EXCESSIVE WOODY MATERIAL.

SOIL TREATMENT

ALL AREAS TO BE STABILIZED (WITH AND WITHOUT SEEDING) SHALL BE LOOSENED TO A DEPTH OF AT LEAST 12 INCHES TO ALLEVIATE COMPACTION AND TO INCORPORATE WOOD CHIPS TO IMPROVE WATER INFILTRATION AND WATER HOLDING CAPACITY. A UNIFORM 3-INCH LAYER OF WOOD CHIPS SHALL BE SPREAD ACROSS THE SURFACE OF THE TREATMENT AREAS. WOOD CHIPS SHALL BE INCORPORATED INTO THE TOP 12 INCHES OF SOIL BY AN APPROVED LOOSENING METHOD. AREAS SHALL BE RAKED SMOOTH FOLLOWING WOOD CHIP INCORPORATION.

SEEDBED PREPARATION

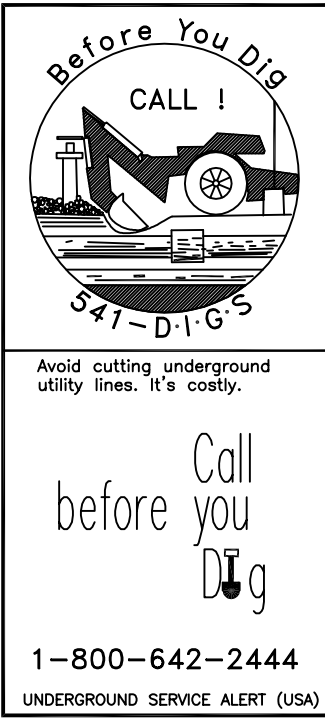
AREAS DESIGNATED FOR SEEDING BY THE RS SHALL BE UNIFORMLY BROADCAST SEEDED WITH HAND OPERATED BROADCAST SEEDERS. THE CONTRACTOR SHALL PROVIDE THE RS A WRITTEN STATEMENT OR SITE DEMONSTRATION TO VERIFY THAT THE SEEDING BROADCAST EQUIPMENT HAS BEEN CALIBRATED TO THE SPECIFIED APPLICATION RATES. LARGE AND SMALL SIZE SEED AS INDICATED IN TABLE 1 SHALL BE BROADCAST IN SEPARATE APPLICATIONS. SEEDING SHALL NOT OCCUR UNDER CONDITIONS THAT WOULD ALLOW SEED TO BECOME WIND BORN. SEED SHALL NOT BE INCORPORATED AND APPLIED WITH HYDROMULCH. IMMEDIATELY FOLLOWING BROADCASTING, THE SEEDED AREAS SHALL BE LIGHTLY HAND-RAKED TO PLACE THE SEED AT DEPTH OF ¼ TO ½ INCH INTO THE SOIL. NO FURTHER VEHICULAR ACCESS WILL BE ALLOWED ON TREATMENT AREAS UPON COMPLETION OF SEEDING. SEEDINGS SHALL NOT BE LEFT OVERNIGHT WITHOUT RECEIVING MULCH TREATMENT.

PINE NEEDLE/ WOOD CHIP MULCH

ALL SEEDED AREAS SHALL BE MULCHED WITH PINE NEEDLES OR WOOD CHIPS. PINE NEEDLE MULCH SHALL BE SPREAD ACROSS SEEDED AREAS IN A LOOSE 2" LAYER TO ACHIEVE A MINIMUM OF 90 PERCENT COVER.

UNSEEDED TREATMENT AREAS SHALL BE MULCHED WITH WOOD CHIPS SPREAD IN A UNIFORM 6 TO 8 INCH LAYER.

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RCI
Resource Concepts Inc

REVISION	DATE

HEAVENLY MOUNTAIN RESORT
Sky Meadows Basin Epic Discovery Activities

DETAIL SHEET

JOB NO.:	12-602.7
DATE:	1/29/14
DESIGNED:	MMG
DRAWN :	MLM/FRB
CHECKED:	MMG

SHEET 7

	Discharge (cfs)	Turbidity (NTU)	Suspended Sediment (mg/L)	Specific Conductivity (mmhos)	Nitrite/ Nitrate (mg/L)	Total Phosphorus (mg/L)	SRP (mg/L)	TKN (mg/L)	Total Nitrogen (mg/L)	Chloride (mg/L)	Total Iron (mg/L)
California State Standard			60*			0.015			0.19	0.15	0.03
<i>HV-C3- Property Line Annual Averages*</i>											
2006	4.3	3.24	8.31	34.71	0.012	0.032	0.007	0.114	0.121	2.467	0.341
2007	0.76	1.95	2.1	50.2	0.005	0.023	0.006	0.08	0.084	1.288	0.119
2008	0.55	0.94	1.36	41.6	0.005	0.018	0.004	0.086	0.091	1.95	0.09
2009	0.46	0.79	1.86	41.83	0.003	0.021	0.004	0.061	0.06	1.27	0.087
2010	0.47	7.71	38.38	43.2	0.013	0.089	0.005	0.351	0.387	0.965	0.064
2011	5.47	9.14	20.37	46.53	0.026	0.042	0.006	0.129	0.154	0.66	0.732
2012	1.09	1.16	2.81	-	0.005	0.020	-	0.085	0.09	0.94	-
2013	0.72	1.37	2.97	-	0.003	0.020	-	0.103	0.106	1.08	-
# Samples	146	101	146	146	146	146	101	146	146	72	27
#Noncompliance	-	-	0	-	-	8	-	-	1	8	6
%Noncompliance	-	-	0.0%	-	-	100.0%	-	-	12.5%	100.0%	100.0%
Maximum Daily	21.38	102.00	506.00	63.70	0.06	1.05	0.02	4.25	4.31	5.90	2.50
Minimum Daily	0.01	0.07	0.27	25.00	0.001	0.009	0.001	0.02	0.00	0.10	0.03
Mean Daily	2.04	3.34	9.37	40.69	0.009	0.032	0.005	0.12	0.13	1.17	0.26
Std Error Daily	3.93	11.96	45.76	7.41	0.013	0.087	0.003	0.35	0.36	0.81	0.49
<i>HV-H5- Hidden Annual Averages*</i>											
2006	4.41	1.94	5.38	39.89	0.004	0.032	0.008	0.13	0.134	0.843	0.107
2007	1.18	1.24	2.76	47.42	0.007	0.026	0.01	0.095	0.102	0.485	0.107
2008	1.11	1.19	1.94	46.02	0.013	0.025	0.019	0.112	0.126	0.993	0.082
2009	0.81	1.42	3.00	44.57	0.008	0.029	0.008	0.112	0.12	0.822	0.184
2010	0.78	2.58	9.19	45.33	0.008	0.043	0.01	0.217	0.225	0.4	0.134
2011	7.05	3.27	9.16	45.90	0.004	0.032	0.007	0.162	0.167	0.244	0.105
2012	1.67	1.31	3.03	-	0.009	0.025	-	0.133	0.141	0.309	-
2013	1.42	1.35	3.06	-	0.009	0.026	-	0.108	0.117	0.276	-
# Samples	145	145	145	100	145	145	100	145	145	72	27
#Noncompliance	-	-	0	-	-	8	-	-	1	8	6
%Noncompliance	-	-	0.0%	-	-	100.0%	-	-	12.5%	100.0%	100.0%
Maximum Daily	31.93	16.00	70.00	66.80	0.04	0.20	0.08	0.97	0.97	2.40	0.44
Minimum Daily	0.09	0.09	0.40	15.23	0.001	0.011	0.001	0.04	0.04	0.10	0.01
Mean Daily	2.55	1.82	4.80	44.14	0.007	0.029	0.010	0.13	0.14	0.41	0.12
Std Error Daily	4.38	2.09	9.87	14.40	0.006	0.020	0.011	0.13	0.13	0.39	0.10

* Suspended Sediment Annual Averages shown are straight averages. The recalculated value using a weighted average based on the days between sample collection are shown in Table 2.3.

	Discharge (cfs)	Turbidity (NTU)	Suspended Sediment (mg/L)	Specific Conductivity (mmhos)	Total Phosphorus (mg/L)	SRP (mg/L)	Nitrate/ Nitrite (mg/L)	TKN (mg/L)	Total Nitrogen (mg/L)
Nevada State Standard		10.0	25			0.100			0.60
<i>HV-E1-Edgewood Above (2006-2013)</i>									
2006	0.66	3.9	4.4	71	0.040	0.009	0.001	0.164	0.165
2007	0.32	3.9	6.4	66	0.062	0.007	0.001	0.195	0.196
2008	0.57	6.0	11.5	64	0.087	0.004	0.003	0.302	0.304
2009	0.35	3.1	8.0	66	0.056	0.003	0.002	0.134	0.136
2010	0.08	2.3	5.5	69	0.030	0.004	0.002	0.150	0.152
2011	0.38	9.8	23.5	80	0.053	0.005	0.002	0.233	0.235
2012	0.31	5.1	11.3	98	0.064	0.002	0.002	0.185	0.188
2013	0.22	4.5	11.1	90	0.066	0.004	0.001	0.235	0.237
# Samples	79	79	79	79	79	79	79	79	79
#Noncompliance	-	3	7	-	-	0	-	-	3
%Noncompliance	-	4%	9%	-	-	0%	-	-	4%
Maximum Daily	3.24	82.00	205.0	131.0	0.366	0.015	0.008	1.098	1.10
Minimum Daily	0.003	0.80	0.40	42.70	0.016	0.001	0.001	0.078	0.079
Mean Daily	0.38	4.99	10.42	78.50	0.056	0.005	0.002	0.200	0.202
Std Error Daily	0.50	9.46	24.59	18.88	0.058	0.003	0.001	0.162	0.162
<i>HV-E2-Edgewood Below (2006-2013)</i>									
2006	0.69	12.7	18.6	153	0.093	0.009	0.031	0.232	0.263
2007	0.36	7.0	10.8	93	0.060	0.008	0.025	0.196	0.221
2008	0.42	13.4	23.5	97	0.131	0.005	0.018	0.319	0.337
2009	0.22	6.2	16.5	114	0.048	0.003	0.041	0.187	0.228
2010	0.12	6.4	14.1	113	0.035	0.005	0.028	0.182	0.210
2011	0.52	6.0	7.4	151	0.039	0.004	0.031	0.210	0.240
2012	0.32	5.4	9.1	134	0.044	0.003	0.037	0.252	0.289
2013	0.19	6.7	8.7	153	0.053	0.004	0.035	0.228	0.263
# Samples	108	109	109	109	109	109	109	109	109
#Noncompliance	-	18	13	-	-	0	-	-	2
%Noncompliance	-	17%	12%	-	-	0%	-	-	2%
Max	4.17	99.00	188.0	478.0	0.58	0.014	0.085	0.963	0.997
Min	0.01	0.65	1.20	43.80	0.01	0.001	0.001	0.064	0.083
Mean	0.39	8.10	12.88	136.34	0.06	0.005	0.032	0.227	0.259
Std Err	0.52	11.11	22.57	63.26	0.08	0.003	0.018	0.133	0.132

Lahontan Regional Water Quality Control Board

INTERNAL MEMO

To: Bud Amorfini, Engineering Geologist



From: Thomas Suk, Senior Environmental Scientist

Date: June 29, 2014

**Subject: HEAVENLY VALLEY CREEK—ANALYSIS OF RESULTS FROM A
DECADE OF BIOASSESSMENT MONITORING (2001-2011), AND
RECOMMENDATIONS FOR FUTURE MONITORING**

This memo replies to your request for bioassessment site scores for Heavenly Valley Creek for 2010 and 2011, and includes an analysis of the available bioassessment data for the past decade, with recommendations for the future.

Background

Total Maximum Daily Loads (TMDLs) were adopted by the Regional Water Board in January 2001, and approved by the USEPA in September 2002. The adopted “desired condition” for Heavenly Valley Creek is:

**“Improving trends in benthic invertebrate community metrics over time,
approaching conditions in Hidden Valley Creek”**

The adopted TMDLs (in part) required Water Board staff to work with the U.S. Forest Service (USFS) to design a bioassessment monitoring plan that is capable of tracking progress toward the desired condition. That plan was completed by the USFS and submitted to the Water Board in March 2003 (*see* USFS 2003). The plan called for bioassessment sampling at five sites at a frequency of “two years on, two years off” (i.e., sampling to be conducted 2002-03, 2006-07, 2010-11, 2014-15, etc., at least until attainment of the desired condition is documented).

It was subsequently proposed by the USFS, and agreed by Water Board staff, that one of the five sites (i.e., Upper Hidden Valley Creek, elevation 9,030 feet) would be dropped from the study design, due to its ephemeral flow conditions (which limited the value of the results) and difficult access (which imposed significant costs).

The remaining four sites include three “test” sites along Heavenly Valley Creek—i.e., Sky Meadows (at 8,540 feet elevation), Below Patsy’s (at 7,921 ft.), and USFS Property Line (at 6,614 ft.)—and one “control” site at Hidden Valley Creek (6,642 ft.). The control site at Hidden Valley Creek is also known as “Lower” Hidden Valley Creek.

From 2001-2011, benthic macroinvertebrate (BMI) samples were collected by four different entities (using a variety of different methods), as summarized in Table 1, below:

Table 1. Bioassessment sampling events at four locations near Heavenly ski resort, including sampling entity and site codes.

Sample Year	Sample Date	HVC-1 Heavenly Valley Cr "Sky Meadows" R5BIO-016 (USFS)	HVC-2 Heavenly Valley Cr "Below Patsy's" R5BIO-018 (USFS)	HVC-3 Heavenly Valley Cr "Property Line" R5BIO-017 (USFS) 634HEV001 (SNARL)	LHC-1 (Lower) Hidden Valley Cr (control site) R5BIO-019 (USFS) 634HID001 (SNARL)
2001	Jul-01	USFS	USFS	USFS	USFS
2001	Jul-01			UCSB-SNARL	UCSB-SNARL
2002	Jul-02			UCSB-SNARL	UCSB-SNARL
2002	Jul-02	USFS	USFS	USFS	USFS
2003	Jul-03	USFS	USFS	USFS	USFS
2006	Sep-06	Heavenly	Heavenly	Heavenly	Heavenly
2007	Aug-07	Heavenly	Heavenly	Heavenly	Heavenly
2010	Aug-10	Heavenly	Heavenly	Heavenly	Heavenly
2011	Aug-11	Heavenly	Heavenly	Heavenly	Heavenly
2011	Oct-11				DFW-ABL

Methods

The bioassessment data (from multiple sources and dates, as summarized in Table 1) were compiled, formatted, scored, and analyzed for trends. Drs. Andrew Rehn and Peter Ode of the Dept. of Fish & Wildlife's Aquatic Bioassessment Laboratory (DFW-ABL) graciously agreed to assist us in compiling, formatting, scoring, and assessing the data.

It took several months (during 2013) and a lot of effort (by Andy, Pete, and me) just to obtain all of the data from the various sources. This initial step took longer than expected. In particular, some of the decade-old data were difficult and time-consuming to locate. I want to specifically acknowledge Dr. Joseph Furnish of the USFS, who provided substantial assistance in locating the "missing" data.

Once we had obtained and compiled all of the data, Dr. Rehn then formatted the data and calculated site scores for all sites/dates, using both the Eastern Sierra Index of Biological Integrity ("ESIBI," Herbst and Silldorff 2009), and the California Stream Condition Index (CSCI) which is currently being prepared for publication by DFW-ABL in collaboration with co-authors at the Southern California Coastal Water Research Project (*see* Mazor and others, in preparation).

The results were evaluated to assess the biotic condition of sites, and to assess trends at individual sites over time.

Results

The site scores are presented in Table 2, below:

Table 2. Bioassessment scores for sampling events at four stream locations near Heavenly ski resort (2001-11), calculated using the Eastern Sierra IBI (ESIBI) and the California Stream Condition Index (CSCI). (Blue cells indicate USFS samples with low BMI counts, yellow cells indicate SNARL samples.)

Sample Year	Sample Date	HVC-1 Heavenly Valley Cr "Sky Meadows"		HVC-2 Heavenly Valley Cr "Below Patsy's"		HVC-3 Heavenly Valley Cr "Property Line"		LHC-1 (Lower) Hidden Valley Cr (control)	
		ESIBI	CSCI	ESIBI	CSCI	ESIBI	CSCI	ESIBI	CSCI
2001 - USFS	Jul-01	35.6	0.56	49.4	0.74	53.9	0.77	75.2	0.92
2001 - SNARL	Jul-01	-	-	-	-	84.2	1.08	93	0.95
2002 - SNARL	Jul-02	-	-	-	-	75.3	0.87	96.8	1.15
2002 - USFS	Jul-02	37.9	0.69	53.9	0.91	51.1	0.72	75.2	1.08
2003	Jul-03	49.6	0.84	56.6	0.85	48.7	0.93	78.2	1.06
2006	Sep-06	55.3	0.92	52.2	0.95	69.1	1.02	80.6	1.15
2007	Aug-07	23.6	0.44	67	0.98	74.7	1.1	93.3	1.04
2010	Aug-10	36.8	0.74	55.2	0.99	80.7	0.9	94.6	1.08
2011	Aug-11	49.8	0.69	75	0.86	83.5	1.02	87.8	0.86
2011	Oct-11	-	-	-	-	-	-	87.8	0.99

The Eastern Sierra IBI was developed by Drs. David Herbst and Erik Silldorff of the University of California's Sierra Nevada Aquatic Research Laboratory (SNARL). The thresholds applicable to the Eastern Sierra IBI (ESIBI) are presented below in Table 3 (reprinted from Herbst and Silldorff 2009).

Table 3. Thresholds applicable to Eastern Sierra IBI (from Herbst and Silldorff 2009)

Supporting (Unimpaired)			Impaired	
Acceptable		Intermediate supporting but uncertain	Partially-supporting	Not supporting
>89.7	89.7–80.4	80.4 – 63.2	63.2 – 42.2	<42.2
A	B	C	D	F
Very good	Good	Fair	Poor	Very poor
Good		Fair	Poor	

The thresholds applicable to the CSCI are not yet published. Our interpretation of the CSCI results was guided by Drs. Andrew Rehn and Peter Ode of DFW-ABL, who are co-authors of the pending CSCI manuscript (*see* Table 4, from: Mazor and others, in preparation).

Table 4. Thresholds used to define condition classes for the CSCI. Pending publication of the CSCI, the values shown below were used for this assessment. (Values in parentheses reflect the probability that scores in the condition class are within the reference distribution.)

Index	Very likely intact (≥ 0.50)	Likely intact (0.30 to 0.50)	Possibly altered (0.10 to 0.30)	Likely altered (0.01 to 0.10)	Very likely altered (< 0.01)
CSCI	> 1.00	$1.00 - 0.92$	$0.91 - 0.79$	$0.78 - 0.63$	$0.62 - 0.00$

Using the thresholds discussed above, biotic condition at site HVC-1 (“Sky Meadows”) is consistently poor according to the ESIBI, and mostly poor according to the CSCI. Biotic condition at site HVC-2 (“Patsy’s”) is generally poor according to the IBI, and generally good according to the CSCI. Biotic condition at site HVC-3 (“Property Line”) is variable (from poor to good, depending on the year) according to the ESIBI, and generally good according to the CSCI. Biotic condition at site LHC-1 (Hidden Valley Creek control site) is always good to very good according to both the IBI and the CSCI.

Discussion

There are several potentially confounding factors that make definitive interpretation of the current dataset difficult. Issues that we considered include: differences in field collection equipment (i.e., net mesh size), differences in area sampled, differences in collection methods (i.e., targeted-riffle methods vs. multi-habitat methods), and differences in field personnel that collected the samples (including poorly documented or undocumented expertise, training, and quality assurance procedures).

Based on prior bioassessment “methods comparison” studies (Rehn and others 2007, Gerth and Herlihy 2006, Herbst and Silldorff 2006 & 2004), we concluded that the effects of most of the methodological differences are relatively minor (e.g., targeted-riffle composite method vs. multi-habitat reachwide benthos method, area sampled, 250um mesh vs. 500um mesh), but three issues stand out:

1. Several USFS samples had very low benthic macroinvertebrate (BMI) counts, making them not good candidates for scoring with either the ESIBI or the CSCI. Both protocols expect at least 450- to 500-count samples, whereas these USFS data points had very low (i.e., < 200) counts. Since SNARL samples from these same sites collected in the same time frame had large BMI counts, and SNARL has both more experience and better QA documentation, it seems likely that this discrepancy may reflect problems with the USFS’s sample collection and/or processing techniques during that era. For these reasons, we recommend ignoring the data from three USFS samples with very low BMI counts (HVC-3 in 2001 and 2002, and LHC-1 in 2001).

2. The 2001 and 2002 SNARL samples stand out as having considerably higher scores than other data from the same sites in the 2001-2002 time period. Dr. Rehn observed that SNARL's taxa lists frequently had a higher frequency of taxa identified to genus level, whereas USFS identifications were more often left at the family level for a number of groups. This may have contributed to the difference. But whatever the cause, because SNARL has both more experience and better QA documentation than the USFS crews of that era, we trust the SNARL results.
3. Even when the USFS samples for 2001-03 had sufficient BMI counts, differences between USFS's and other crews' scores persisted. (See LHC-1 in 2002-03.) For example, we cannot definitively explain why the USFS crews consistently obtained lower IBI scores at the control site (LHC-1) than the other three crews (SNARL, Heavenly's consultants, and ABL).

Another key issue is that—given the variability in scores—there simply are not enough samples to permit a valid statistical comparison to demonstrate “improving trends over time” (as called for by the TMDLs). Even if we ignored the three issues above, statistical tests of early vs. later years would not demonstrate definitive trends because of the high variance in individual observations. While some (or all) of the HVC sites may be on an “upward” trend since the implementation of post-TMDL sediment control measures, we cannot conclude with a high degree of confidence whether any such trend is underway. At best, more data are needed to document any trend(s). At worst, the management measures installed to date may be insufficient to achieve the desired condition. Continued monitoring is needed to answer these questions.

If we exclude the questionable results, as discussed above, several generalizations about site condition can be made. Table 5, below, summarizes the results in narrative terms. The ESIBI and CSCI assessments generally agree for three of the four sites. We cannot explain why the assessments differ at the fourth site, HVC-2 (Heavenly Valley Creek below Patsy's), where the ESIBI scores indicated generally poor biotic condition, and the CSCI scores indicated generally good condition. That difference may be due, in whole or in part, to methods, sampling error, and/or the low number of samples. Additional sampling may shed light on this question.

Table 5. Narrative summary of biological condition scores
(excluding questionable samples; see discussion)

Site	CSCI	ESIBI
HVC-1 Sky Meadows	Biological scores generally poor (except 2003 & 2006 were fair to good)	Biological scores always poor
HVC-2 Below Patsy's	Biological scores generally good (except 2001 was fair)	Biological scores generally poor (except 2007 & 2011 were “fair”)
HVC-3 Property Line	Biological scores generally good	Biological scores mixed ➤ poor in 2003 ➤ fair in 2002, 2006-07 ➤ borderline fair-good in 2010 ➤ good in 2001, 2011
LHC-1 Lower Hidden	Biological scores always good to very good	Biological scores always good to very good

Conclusions & Recommendations

In the decade since TMDLs were adopted for Heavenly Valley Creek (i.e., from 2001-2011), bioassessment monitoring was conducted at three sites along the Creek, and at a nearby “control” site (Hidden Valley Creek). Taken as a whole, the results indicate that the instream biotic condition of site HVC-1 (“Sky Meadows”) is poor, and the biotic condition of sites HVC-2 (“Patsy’s”) and HVC-3 (“Property Line”) is generally fair to good (but not yet “*approaching conditions in Hidden Valley Creek*” as called for in the TMDLs).

While nascent signs of recovery may be emerging, there is insufficient data at this time to determine whether biotic condition is improving significantly at any of the sites since the TMDLs were adopted.

Given the above findings, bioassessment monitoring should be continued (using SWAMP’s Reachwide Benthos protocols and the existing 2-years-on, 2-years off schedule), at least until an improving trend can be definitively documented (i.e., conduct sampling in 2014-15, 2018-19, 2022-23, etc.).

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Memorandum

DATE: August 8, 2014

TO: Melanie Greene Armstrong, Hauge Brueck Associates
Chris Donley, CardnoENTRIX, Inc.
Andrew Strain, Heavenly Mountain Resort

FROM: Kristin Roaldson and Jill Sutherland

PROJECT: Heavenly Epic Discovery EIS/EIR/EIR

SUBJECT: BMP Monitoring Results 2006-2013

The following provides a discussion of the results from BMP Effectiveness Monitoring Program (Revised Environmental Monitoring Program, 2007) at Heavenly Mountain Resort (Heavenly), specifically for Permanent Best Management Practices (BMPs), for the period 2006 through 2013. In general, Permanent BMPs are BMPs used on a long-term basis to control erosion, reduce sediment transport, and prevent potential contaminant releases.

A description of the BMP monitoring protocol and data for the period 2006 through 2011 is found in the *Environmental Monitoring Program, Comprehensive Report, Heavenly Mountain Resort Water Years 2006 - 2011* (CardnoENTRIX, 2013). Per your request, this memo updates the evaluation with the monitoring results for 2012 and 2013 (BMP Effectiveness Monitoring annual reports, RCI, 2013, and RCI, 2014). Summaries for this period are presented below for the overall resort and, where feasible, on a watershed basis.

Resort Wide Evaluation

Permanent BMPs were routinely installed and monitored throughout the resort for both existing facilities and new projects during the monitoring period from 2006 to 2013. There were 346 separate permanent BMP evaluations completed at 117 separate sites. The number of inspections per year varied from 30 to 70 evaluations per year and averaged 43 per year. Variations are due to annual levels of activity at the Resort and the 3-year monitoring intervals. BMPS are monitored at 1, 3, 6, and 9-year intervals after they are installed, to evaluate both “implementation” and “effectiveness” over time.

Implementation

“Implementation” evaluates whether project design of BMPs are adequate for resource protection, and if BMP improvements are constructed according to the planning/management criteria. For 2006 through 2013, resort-wide Permanent BMP implementation ranged from 71 (2006) to 97 (2013) and 98 (2012) percent “fully implemented”. Evaluations averaged 47 per year with an average of only one (1) score of “not implemented” per year (Table 1). When design issues have been identified Heavenly has been responsive in correcting the situation. On the project level monitoring shows BMP implementation at Heavenly has been improving due to the following reasons.

MEMORANDUM

August 11, 2014

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- Completion of BMP retrofits at most existing facilities,
- Plans and specifications for BMPs for new construction projects have been prepared with increasing levels of detail during the eight year period, and
- Improved communication of BMP objectives, as well as training and experience of Heavenly's designated BMP field crews.

Table 1. Resort Wide Permanent BMP Implementation 2006 to 2013

Implementation Score	Average Number of Occurrences
Fully Implemented	42 per yr.
Minor Departure	3 per yr.
Not Implemented	1 per yr.
Total	47 per yr.

Overall Implementation is based on scores for two components: design and construction. To improve BMP design and construction at Heavenly, a review of the not "fully implemented" occurrences was made in the 5-year Comprehensive Reports (USDA Forest Service, 2003; CardnoENTRIX, 2006, CardnoENTRIX, 2013). For the eight year period (2006-2013), 19% of the small number of deviations from "fully implemented" were related to design or planning/management criteria and 81% were related to construction activities. The results are consistent with the comprehensive report for 2006 through 2011 (CardnoENTRIX, 2013). As technology and standards evolve, these results have been used by Heavenly to identify needs and adopt improved BMP design and construction techniques. In the last four years (2010 through 2013) no evaluations scored "not implemented".

Effectiveness

Resort-wide Permanent BMP effectiveness ranged from 84 to 98 percent on an annual basis from 2006 through 2013. The number of evaluations averaged 47 per year over the eight year period with an average of one (1) score of "not effective" and four scores of "at risk" per year (Table 2). The incidences of "at risk" scores decreased over the period, primarily related to implementation of new BMP techniques resulting in more effective long term soil stabilization.

Table 2. Permanent BMP Effectiveness Scores 2006 to 2013

Effectiveness Score	Average Number of Occurrences
Fully Effective	43 per yr.
At Risk	4 per yr.
Not Effective	1 per yr.
Total	47 per yr.

Overall "effectiveness" of permanent BMPs is evaluated using six criteria: Source Control/Soil Cover, Revegetation, Slope Protection, Drainage Systems/Infiltration, Ponding, and Hazardous Materials. The results for individual criteria help Heavenly to identify which types of BMPs are the most or least effective over an extended period of time (monitoring occurs at 1, 3, 6, and 9 years after installation). Of the six categories, Source Control/Soil Cover had more occurrences of not "fully effective". However, the transition to new revegetation techniques and soil amendments during 2006 through 2007 on many projects has resulted in improving effectiveness. Of the categories, Slope Protection had the second highest incidence of scores not "fully effective". This was primarily related to slope protection BMPs transitioning from erosion control fabrics to soil amendments or rock slope protection during the 2006

to 2013 period. As projects are monitored at 1, 3, 6 and 9 year intervals, results show whether BMP techniques are effective over the long term. If monitoring results identify BMPs that lose effectiveness over time, Heavenly has upgraded the BMPs with newer techniques.

Evaluation By Watershed

Heavenly Mountain Resort facilities are located in six different watersheds, as identified in the Master Plan. The two watersheds with majority of permanent BMP evaluations are the Heavenly Valley Creek watershed (46% of evaluations) in California and the Edgewood Creek watershed (18% of evaluations) in Nevada. Overall, 61% of evaluations were performed in California and 39% performed in Nevada. Monitoring varies with levels of activity in the various watersheds and the monitoring intervals specified in the protocol.

Monitoring results are summarized in Tables 3 and 4 for the following watersheds: Heavenly Valley Creek (CA-1), Edgewood Creek (NV-3), and South Fork Daggett Creek (NV-2+5). The Mott Canyon Creek (NV-1) and Tributary to Daggett Creek (NV-4) watersheds are not included since less than ten BMP evaluations were conducted within these watersheds, providing a limited data set for the 8-year period.

Implementation

Consistent with the overall “implementation” results for the resort (Table 1) and the 2011 comprehensive report (CardnoENTRIX 2013), departures from “fully implemented” on a watershed basis were infrequent (Table 3), and were more often construction than design concerns. If field monitoring identified design or construction concerns, Heavenly has been responsive in making corrections.

Table 3. Permanent BMP Implementation Results 2006 to 2013 For Watersheds

Average Number of Occurrences By Watershed	Heavenly Valley Creek Watershed (CA-1)	Edgewood Creek Watershed (NV-3)	South Fork of Daggett Creek Watershed (NV-2&5)
Fully Implemented	19 per yr.	7 per yr.	4 per yr.
Minor Departure	2 per yr.	0.88 per yr.	1.5 per yr.
Not Implemented	0.6 per yr.	0.13 per yr.	0.13 per yr.
Total	21 per yr.	8 per yr.	6 per yr.

Effectiveness

“Effectiveness” monitoring result by watershed shown in Table 4, show similar results to the overall resort evaluation (Table 2) and the majority of Permanent BMPs rated “fully effective”. Of BMPs found not fully effective, the Source Control/Soil Cover and Slope Stabilization criteria were again the most frequent in CA-1 and HV-3 watersheds, while Revegetation success criteria was more of a concern the NV 2&5 watershed.

Table 4. Permanent BMP Effectiveness Results 2006 to 2013 For Watersheds

Average Number of Occurrences By Watershed	Heavenly Valley Creek Watershed (CA-1)	Edgewood Creek Watershed (NV-3)	South Fork of Daggett Creek Watershed (NV-2&5)
Fully Effective	19 per yr.	7 per yr.	5 per yr.
At Risk	2 per yr.	0.50 per yr.	1.0 per yr.
Not Effective	0.5 per yr.	0.25 per yr.)	0.5 per yr.
Total	21 per yr.	8 per yr.	6 per yr.

Table 4

Revised CWE Restoration Program (2006-2016 and On-going)

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
PHASE I								
CA-1								
1	R99	Powderbowl Access	Construct Runs G9 (Powderbowl Woods Built in 2007)	Post-project road maintenance treated annually; Access spur eliminated and second spur improved as part of Powderbowl lift replacement project; t 0.08 acres upgraded/0.07 acres decommissioned	2008	2008	RCI Photo Documentation	Yes
2	R141-R143	Lower California Trail	Construct I4 (Pinnacles 1 Implemented in 2007)	Revegetate, Mulch; Decommissioned Road segment R143 treated as part of log deck decommissioning	2007	2013	Heavenly Mountain Operations Staff	Yes
3	R141-R143	Lower California Trail	Construct I5 (Pinnacles 2 Implemented in 2007)	Revegetate, Mulch; Decommissioned Road segment R143 treated as part of log deck decommissioning	2008	2013	RCI Photo Documentation/ Heavenly Project Records	Yes
4	R166-R167	Roundabout Road	Construct Run 1A	Forest Service to advise as to need for Pre- and Post project maintenance; Road is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program	On-going	On-going	RCI Plan Sets	Future Capital Project
5	R263	Mid-station Road	Construct Gondola Hiking Trails	Forest Service to advise as to need for Pre- and Post project maintenance Road segments R261-R263 are treated annually as part of opening summer mountain access. Daily	2007	On-going	RCI Plan Set	Future Capital Project

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
				Summer dust abatement watering program.				
6	R1-4	Skyline	Skyline Trail Realignment (Implemented in 2008)	Decommission and revegetate abandoned road segments per design plans in MPA 07 EIR/EIS/EIS Appendix 2-J Skyline Trail was regraded with substantial slope stabilization, roadway width narrowing and erosion resistance treatment per approved design plans. Road is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program when open to public hiking.	2008	On-going	RCI Photo Documentation; BMP Effectiveness Monitoring Annual Report; Construction Season Summary; RCI Plan Set	Yes On-going Road Maintenance
7	Gondola Top Station	Site Clean Up/Landscaping	Construct Additional Tubing/Winter Park at Top of Gondola (Implemented in 2010 and 2013)	Remodel and Expand Vehicle and Lift Maintenance Shop at Top of Tram (Upper Shop) Gondola area clean up conducted and wood chip cover placed annually throughout top of gondola area. Revegetation seed mix planted in 2010, 2011, & 2013 in front of Tamarack Lodge. Daily Summer dust abatement watering program. Area receiving naturalized landscape seed and plantings as part of Summer Activities enhancements. Additional surface drainage improvements in flat areas where water accumulates to be implemented in 2014.	2007	Ongoing	RCI Photo Documentation; BMP Effectiveness Monitoring Annual Report; Construction Season Summary; RCI Plan Set; Heavenly Project Records	Yes
8	R250-R253	Von Schmidt to East Peak	Replace/Relocate Lifts S and T (Olympic Lift replaced in 2007/North Bowl Lift not Replaced)	Forest Service to advise as to need for Pre- and Post project maintenance Road is treated annually as part of opening summer mountain access.	2007	On-going	Heavenly Mountain Operations Staff	Yes Ongoing Road Maintenance

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
				Road corridor is roped annually and pine needles applied to road shoulders. Included in daily Summer dust abatement watering program. Segment 250 to be treated following construction of Big Easy zipline project.				
9	R155-R156	Groove/Upper Shop	Upper Shop SEZ Improvements (Implemented in 2006 and 2007)	<p>May require pre- and post project road work per review by Forest Service; rock-lined drainages are difficult to clean out due to the design implemented, but maintenance is necessary; maintenance of revegetation of cut and fill slopes; waterbar/rolling dip repairs</p> <p>Road improvements implemented per project design plans. Existing road is partially paved and maintained annually as part of summer road maintenance. Road base added to switch back corner (2013)</p>	2007	On-going	RCI Photo Documentation; BMP Effectiveness Monitoring Annual Report; Construction Season Summary; RCI Plan Set; Heavenly Project Records	<p>Yes</p> <p>On-going Road Maintenance</p>
10	R91-R95	Sky Meadows	Removal of Sky Meadows Deck and Meadow Restoration	<p>Forest Service to advise as to need for Pre- and Post project maintenance</p> <p>This Project would be implemented upon construction of Powerbowl Lodge, summer uses would be serviced by temporary structures that would be removed prior to the start of winter uses</p>	--	--		<p>Future Capital Project</p> <p>Ongoing Road Maintenance</p>

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
11	R47-R57	Lower Ridge Road	Construction of Powderbowl Lodge	Forest Service to advise as to need for Pre- and Post project maintenance Existing road maintained annually as part of summer road maintenance. Daily Summer dust abatement watering program on road segments up to Powderbowl Express lift station.	2007	On-going	RCI Photo Documentation; Heavenly Project Records	Future Capital Project Ongoing Road Maintenance
12	R58-R79	Maggie's Road	Construction of Powderbowl Lodge	General project maintenance; revegetation of cut and fill slopes, cleaning and repair of drainage ditches; repair of rolling dips; additional base rock may be required prior to use for Phase I projects; Forest Service to advise as to need for Pre- and Post project maintenance; Existing road maintained annually as part of summer road maintenance. Road has a road base surface from base of Patsy's chair to CA pumphouse. Daily summer dust abatement watering program	2007	On-going	RCI Photo Documentation; BMP Effectiveness Monitoring Annual Report; Construction Season Summary; RCI Plan Set; Heavenly Project Records	Future Capital Project Ongoing Road Maintenance
13 (Same as #5)	R263	Mid-station Road	Construct Gondola Hiking Trails	Forest Service to advise as to need for Pre- and Post project maintenance Road segments R261-R263 are treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program.	2008	2011	RCI Plan Set	Future Capital Project Ongoing Road Maintenance
14 (Same as #9)	R155-R156	Upper Shop	Upper Shop BMP and SEZ Restoration Project- Phase I (Implemented in 2006 and 2007)	Road upgrades implemented per design plans in Appendix 3.2-A	2006	2008		Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
15	Ski Run Segment Revegetation	CA-1 Ski Run segments	General maintenance of revegetation projects	<p>Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring</p> <p>The following ski runs were treated as part of 2011/2012 minor run widening project: Canyon 1 & 2, Ellie's Trail, Swing Trail, and Liz's'. Hot spots on Ridge Run are identified and treated. Blue Angel Chutes waterbars were rebuilt in 2010 and re-mulched in 2011. Water bar and road maintenance on Mombo Run in 2010. Pioneer Run (Ski Run N1) was treated with "Full Hogan prescription" in 2013. Ski School teaching area (Trail O1) is site of on-going experimental test plots by IERS. Irrigation annually on Ridge, Lower Cat Track, Creek Station, Maggie's Corner, Sky Meadows, Gondola Area and Pioneer Trail.</p> <p>Monitoring of effective soil cover and specification of erosion control treatments have evolved over the monitoring period, in consultation with the Forest Service and Lahontan. The initial focus on soil cover has been broadened to include infiltration potential, slope, and surface roughness. The 2011 CMR put forth this expanded approach, and implementation is under development with the relevant agencies.</p>	2010	2013	Heavenly Mountain Operations Staff	Yes On-going Ski Run Maintenance

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
CA-4								
16	R167-R176	Roundabout System	All Phase I projects on the California-side of the resort will utilize this road system (Implemented 2007-2013)	Forest Service to advise as to need for Pre- and Post project maintenance Road is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program	2007	On-going	RCI Photo Documentation; Heavenly Project Records	Yes
17	Ski Run Segment Revegetation	CA-4 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	X	On-going		No
CA-6 18	R177-R187	Roundabout System	All Phase I projects on the California-side of the resort will utilize this road system (Implemented 2007-2013)	Forest Service to advise as to need for Pre- and Post project maintenance Road is treated annually as part of opening summer mountain access, including placing road base in specific corners. Daily Annual Summer dust abatement watering program	2007	On-going	RCI Photo Documentation; Heavenly Project Records	Yes
19	Compliance Project	California Parking Lot	BMP Retrofit Project on the California Parking Lot (Implemented in 2006)	Compliance with Updated Discharge Permit Stormfilter-brand stormwater management system installed, barren slopes revegetated, snow removal and storage plan developed and implemented, Maintenance on the parking lot, surrounding areas and Stormfilter system is conducted annually. Filter cartridges in vaults are replaced as needed to remain effective.	2006 Phase 1	2007 Phase 2	RCI Photo Documentation, HMR BMP Effectiveness Monitoring Annual Report/ Construction Season Summary, RCI Plan Set, Heavenly Records and TRPA Project File Inspections	Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
20	Ski Run Segment Revegetation	CA-6 Ski Run segments	General maintenance of revegetation projects	<p>Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring</p> <p>World Cup treated in 2010. Poma Run treated annually. Adult Ski School Area treated in 2008 as part of surface lift replacement project. Soil cover on East Bowl & Gunbarrel runs remains effective and do not need further treatment at this time Other erosion hot spots are field-identified and treated. Lower slopes are irrigated annually.</p> <p>Monitoring of effective soil cover and specification of erosion control treatments have evolved over the monitoring period, in consultation with the USFS and Lahontan. The initial focus on soil cover has been broadened to include infiltration potential, slope, and surface roughness. The 2011 CMR put forth this expanded approach, and implementation is under development with the relevant agencies.</p>	2007	On-going	RCI Photo Documentation, HMR BMP Effectiveness Monitoring Annual Report/ Construction Season Summary, Heavenly Project Records	Yes
CA-7								
21	R264-R267	Mid-station Road	Reconstruct Mid-station Access Road (Implemented in 2008)	<p>Phase I Project per design plans in Appendix 2-L</p> <p>Roadway was reconstructed per approved plans. Road is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program</p>	2008	On-going	RCI Photo Documentation, BMP Effectiveness Monitoring Annual Report/ Construction Season	Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
							Summary	
NV-1								
22	Ski Run Segment Revegetation	NV-1 Ski Run segments	General maintenance of revegetation projects	<p>Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program Monitoring</p> <p>Erosion hot spots are field-identified and treated. Hot spots identified during 2014 field assessment will be addressed prior to additional capital development in NV-1; Areas include Orion's, Big Dipper and Aries Woods trails. Cross-slope waterbar maintenance needed on Orion's & Big Dipper runs. Road base added to corners in road segments 610-614 (Ski Run U1).</p> <p>Monitoring of effective soil cover and specification of erosion control treatments have evolved over the monitoring period, in consultation with the USFS and Lahontan. The initial focus on soil cover has been broadened to include infiltration potential, slope, and surface roughness. The 2011 CMR put forth this expanded approach, and implementation is under development with the relevant agencies.</p>	2007	On-going	RCI Photo Documentation, HMR BMP Effectiveness Monitoring Annual Report/ Construction Season Summary, Heavenly Project Records, Heavenly Mountain Operations Staff	Partial
NV-2+5								

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
23	R580-R581	Top of Comet Access Road	Construct W5	Cut slope stabilization; control surface runoff on to Aries run and new W5; maintenance of rolling dips	2007	2009		Future Capital Project Ongoing Road Maintenance
24	R500-R504 (Road segments R500, R501 and R504 are in NV-3; Road Segments R 502 and R503 are in NV-2+5)	Von Schmidt to East Peak	Replace/Relocate Lifts S and T (Olympic Lift replaced in 2007/North Bowl Lift not Replaced)	Forest Service to advise as to need for Pre- and Post project maintenance Road segment 504 was abandoned as part of Olympic lift replacement project. Other road segments were treated as part of lift replacement project. Road is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program when hiking trails are open. Road Segment 503 to be treated following completion of Big Easy zipline project	2007	On-going	Heavenly Mountain Operations Staff	Partial
25	Ski Run Segment Revegetation	NV-2+5 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program Monitoring Former ATV trail on upper Comet Run has been decommissioned; Comet Run and \$100 Saddle area are irrigated annually. Erosion hot spots are field-identified. New trails 14 and 15 utilized soil cover treatment prescription, which remains effective. Cross-slope waterbar maintenance needed on Comet and Jack's runs. Monitoring of effective soil cover and specification of erosion control treatments have evolved over the monitoring period, in consultation with the USFS and Lahontan. The initial	2011	On-going		Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
				focus on soil cover has been broadened to include infiltration potential, slope, and surface roughness. The 2011 CMR put forth this expanded approach, and implementation is under development with the relevant agencies.				
NV-3								
26	R531-R540 (Road Segments R531-R540 are located in NV-2+5)	Upper Wayhome Road	Realign Run 6/ Road Segments R531-540	Now called Nevada Trail; Restore and revegetate abandoned road segments Existing road still in use and is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program	--	--	Heavenly Project Records	Future Capital Project Ongoing Road Maintenance t
27	R633	Base of North Bowl Chair	Replace/realign Lift S (Olympic Lift replaced in 2007/North Bowl Lift not Replaced)	Restore and revegetate abandoned road segment Road segment 633 was not relocated and remains in use. Road is treated annually as part of opening summer mountain access.	2007	On-going	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary	Future Capital Project Ongoing Road Maintenance
28	R630-R632	Base of North Bowl Chair	Replace/realign Lift S (Olympic Lift replaced in 2007/North Bowl Lift not Replaced)	Road segments to receive pre- and post project maintenance per design plans in Appendix G Road is treated annually as part of opening summer mountain access. Road segment 631 was moved further away from Edgewood Creek and was regraded and armored	2007	On-going	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary	Future Capital Project Ongoing Road Maintenance

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
29	R521-R523	Top of North Bowl Chair Access Road/Pepi's	Replace/realign Lift S (Olympic Lift replaced in 2007/North Bowl Lift not Replaced)	Road segments to received maintenance upon replacement/realignment of Lift S per design plans in Appendix 2-G Road is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program. Rock slope protection added to cut slope above road along Road segment 522 in 2014	2007	On-going	Heavenly Mountain Operations Staff	Yes On-going Road Maintenance
30	R571-R573A	Olympic Base to Tower 18	Remove Lift T (Olympic Lift replaced in 2007)	Decommission road segments upon removal/relocation of lift Road to base of Olympic lift treated as part of lift replacement project. Road Segments 573 and 573A were decommissioned as part of project. Road decommissioning included soil loosening, amendments, seed, mulch	2007	2009	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary	Yes On-going Road Maintenance
31	R506-R513	Alternate Route to East Peak	Construct Runs S8 (Implemented in 2007)	These segment are decommissioned; maintenance and revegetation	X	On-going		No
32	Olympic1-5	Run S1	Construct S9 (Implemented in 2007)	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring Run segments adjacent to lift terminals were treated as part of Olympic Express lift replacement project. Run S1 is irrigated annually to maintain soil cover.	2009	On-going	RCI Photo documentation, Heavenly Mountain Operations Staff	Yes On-going Ski Run Maintenance

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
				Monitoring of effective soil cover and specification of erosion control treatments have evolved over the monitoring period, in consultation with the USFS and Lahontan. The initial focus on soil cover has been broadened to include infiltration potential, slope, and surface roughness. The 2011 CMR put forth this expanded approach, and implementation is under development with the relevant agencies.				
33	N/LNBOWL1-4	Run S3	Construct S10 (Implemented in 2007)	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring Edgewood Creek SEZ restoration project completed in 2006. Effective soil cover in non-SEZ sections of ski run remains effective	2006	2007	RCI Photo Documentation	Yes
34	Ski Run Segment Revegetation	NV-3 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring Run Q1 revegetated as part of SEZ restoration project in Edgewood Bowl. Trail X1 revegetated with "Full Hogan prescription" as part of Boulder Magic Carpet removal. Olympic Run is irrigated annually. Monitoring of effective soil cover and	2006	2010	RCI Photo Documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
				specification of erosion control treatments have evolved over the monitoring period, in consultation with the USFS and Lahontan. The initial focus on soil cover has been broadened to include infiltration potential, slope, and surface roughness. The 2011 CMR put forth this expanded approach, and implementation is under development with the relevant agencies. Ski run segment known as the Olympic Downhill Traverse needs maintenance.				
NV-4								
35	BMP Retrofit Project		Stagecoach Parking Lot	Full BMPs are needed at this facility to decrease the ERA of NV-4 to below the allowable TOC	--	--		Future Capital Project
36	Ski Run Segment Revegetation	NV-4 Ski Run segments	General maintenance of revegetation projects	<p>Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program Monitoring</p> <p>The Tahoe Rim Trail was relocated and the existing trail segment was decommissioned by the Tahoe Rim Trail Association (TRTA). TRTA has agreed to re-decommission it in 2014 due to continued use by hikers. Lower Stagecoach Trail has a small number of specific areas lacking effective cover to be retreated. It is the only ski trail in the watershed.</p>	2012	On-going	Heavenly Mountain Operations Staff	Partial

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
NV-4A 37	R557-R562 (Road Segments R557-R562 are located in NV-4 and NV-5)	Nevada Trail (was Wayhome)	Phase I Projects will utilize these road segments	Forest Service to advise as to need for Pre- and Post project maintenance Road is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program	2007	On-going	Heavenly Project Records	Yes On-going Road Maintenance
38	Ski Run Segment Revegetation	NV-4a Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program Monitoring Perimeter Run treated with wood chips in 2011 as part of implementing Trail U3	2011	2011	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Yes
NV-5								
39	R545-R550	Nevada Trail (was Wayhome)	Phase I Projects will utilize these road segments (Not Implemented)	Forest Service to advise as to need for Pre- and Post project maintenance Existing road still in use and is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program	2007	On-going		Yes
40	Ski Run Segment Revegetation	NV-5 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program Monitoring Upper Stagecoach Trail is extremely well-vegetated with effective cover. Additional maintenance or treatment is	2008	2009	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary,	Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
				<p>not necessary. Revegetation and wood chips using the "Full Hogan" prescription were added to several segments of the existing Stagecoach trail as part of a snowmaking improvements project resulting in effective cover.</p> <p>Monitoring of effective soil cover and specification of erosion control treatments have evolved over the monitoring period, in consultation with the USFS and Lahontan. The initial focus on soil cover has been broadened to include infiltration potential, slope, and surface roughness. The 2011 CMR put forth this expanded approach, and implementation is under development with the relevant agencies</p>			Heavenly Mountain Operations Staff	
PHASE II								
CA-1								
41	Patsy1-6	Run E1	Replace Lift E	<p>Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring</p> <p>General run maintenance last completed in 2006</p>	2006	2006	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Future Capital Project

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
42	R148-149	Groove/Upper Shop Road	Remove Lift F	Forest Service to advise as to need for Pre- and Post project maintenance General road maintenance completed in 2008	2008	2008	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Future Capital Project
43	R528-R530 (Road Segments R228-R530 located in NV- 2+5)	Lift HH	Construct Lift HH (Lift at Von Schmits – Built 2009)	Forest Service to advise as to need for Pre- and Post project maintenance (road in summer, transport lift in winter) Road is treated annually as part of opening summer mountain access. Daily Summer dust abatement watering program	2009	On-going	RCI Photo Documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Yes On-going Road Maintenance
44	Bettys6-9	Run H6	Construct Run H12/Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
45	Ridge1-5	Run 3	Construct Run H13/Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
46	Groove1-5	Run E2	E2 Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
47	Watrfall1	Run G4	G4 Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
48	PwdrblRn1-7	Run G8	G8 Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
49	PowdrBwl1-4	Run G8	G9 Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
50	Bettys1-5	Run H5	H5 Snowmaking (below ground)	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
51	ElleSwng1-3	Run I2	I2 Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
--	No Project	No Project	GG2 Snowmaking		--	--		No Project required
52	FORTY9ER1-4	Run GG5	GG5 Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
53	In-ground Halfpipe	Run H11	Construct along Run H11	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
--	No Project	No Project	HH2 Snowmaking		--	--		No Project required
--	No Project	No Project	HH3 Snowmaking		--	--		No Project required
54 (Same as #9)	R155-R156	Vehicle Maintenance Shop at Top of Tram	Remodel and Expand Facility (Implemented 2006-2008)	May require pre- and post project road work per review by Forest Service; rock-lined drainages are difficult to clean out due to the design implemented, but maintenance is	2007	On-going	RCI Photo Documentation; BMP Effectiveness Monitoring	Yes On-going Road Maintenance

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
				necessary; maintenance of revegetation of cut and fill slopes; waterbar/rolling dip repairs Road improvements implemented per project design plans. Existing road is partially paved and maintained annually as part of summer road maintenance. Road base added to switch back corner (2013)			Annual Report; Construction Season Summary; RCI Plan Set; Heavenly Project Records	
55	R250-R256	Von Schmidt Road/Run	10 Snowmaking	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
56	General Revegetation/L andscaping	General Revegetation/ Landscaping	Construct Top of Gondola Lodge (Implemented 2010/Tamarack Lodge)	Landscaping Plan	2007	On-going	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Yes
57	R127-R136	California Breakover/Hel winkle's	Construct Top of Gondola Lodge (Implemented 2010/Tamarack Lodge)	Forest Service to advise as to need for Pre- and Post project maintenance In 2010, RCI designed and we implemented a road drainage improvement project for the upper road section near the top of Cal Trail Breakover.. Road base to nearly the entire length of roadway most recently in 2013	2010	2013	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
58	General Revegetation/L andscaping	General Revegetation/ Landscaping	Expand Tubing at Top of Gondola (Implemented in 2009)	Landscaping Plan	2007	On-going	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Yes
59	Ski Run Segment Revegetation	CA-1 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	Yes On-going Ski Run Maintenance
CA-4								
60	Communication site Access Road	Communicatio n site Access Road	Angel's Roost (Implemented in 2011)	Forest Service to advise as to need for Pre- and Post project maintenance Access road decommissioned (soil loosening, amendments, seed, mulch)	2012	2012	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary	Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
61	Ski Run Segment Revegetation	CA-4 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary, Heavenly Mountain Operations Staff	On-going Ski Run Maintenance
CA-6								
62	Ski Run Segment Revegetation	CA-6 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		On-going Ski Run Maintenance
63	Site Clean up		Relocate Lower Shop off-site		--	--		Future Capital Project
CA-7	No Project				--	--		No Project required
--								
NV-1								
64	BIGDIP1-4	Run V4	Construct V11 (Implemented 2011)	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program	X	X		No

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
65	Ski Run Segment Revegetation	NV-1 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
NV-2+5								
66	R620A	R620A	Replace Lift U	Maintenance of BMPs (waterbars) and Run Revegetation	--	--		Future Capital Project
67	R531-R539	Upper Wayhome (Ski Run 6)	Phase I Project to realign Ski Run 6	Now called Nevada Trail; Phase I project to realign this road/ski run segment; abandoned road segment will be decommission and revegetated in accordance with Forest Service standards and guidelines for decommissioned roads;	--	--		Future Capital Project
--	No Project	No Project	Construct Run U4/Snowmaking		2011	2011		No Project Required
68	ORIONS 9-11	Run V9	Construct Run V12/Snowmaking (Implemented in 2007)	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	X	X		No
--	No Project	No Project	Construct Run 14/Snowmaking (Implemented in 2010)		--	--		No Project Required
	No Project	No Project	Construct Run 15/Snowmaking (Implemented in 2010)		--	--		No Project Required

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
69	PERIMIR5-9	Run U1	Snowmaking U1	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
70	R649-R655	Lower Galaxy/Stump Piles	Snowmaking U2	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
71	R584-R585	Knob Trail	Snowmaking V3	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
72	R609	Lower Dipper Return	Snowmaking V5	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
73	Jack1-3	Run W2	Snowmaking W2	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
74	Ski Run Segment Revegetation	NV-2+5 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		Future Capital Project
NV-3								
75	R631-R632 and NB Access Road	Base of North Bowl/Boulder and NB Access Road	Replace Lift Q	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
76	OLYMPIC4-9	Run S1	Snowmaking S1	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
--	No Project	No Project	Snowmaking S2	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		No Project Required
--	No Project	No Project	Snowmaking S3	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		No Project Required
77	R519-R522	Pepi's	Snowmaking S4	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
78	R599-606A	Old NV Fuel Island	Snowmaking S6	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
79	R599-606A	Old NV Fuel Island	Snowmaking S7	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Capital Project not implemented/CW E Restoration Project not triggered
80	Ski Run Segment Revegetation	NV-3 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area	On-going	On-going		On-going Ski Run Maintenance

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
				Monitoring				
NV-4								
81	R560-R563	Middle Wayhome/Ne vada Trail	R2 Snowmaking	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Capital Project not implemented/CW E Restoration Project not triggered
82	BMP Retrofit Project	BMP Retrofit Project	Stagecoach Deck and Parking Lot	BMP Parking Lot and Revegetate Areas Disturbed by Deck Expansion	--	--		Future Capital Project
83	Ski Run Segment Revegetation	NV-4 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
NV-4A								
84	PERIMTR5-9	Run U1	Construct Run U3/Snowmaking (Implemented in 2010)	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	X	X		No
85	Ski Run Segment Revegetation	NV-4A Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
NV-5								
86	R566-R570	Access to Olympic Downhill	Construct Run R3	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
87	R662-R664	George's	Construct Run R4	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
88	R545-R548	Lower Wayhome/Ne vada Trail	Construct Run 16	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
--	No Project	No Project	Construct Run 18		--	--		No Project Required
89	UPRSTG1-4	Run R1	R1 Snowmaking	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program Monitoring Snowmaking corridor treated in 2008 and 2009 and remains effective. The remaining area of Upper Stagecoach Trail is well-vegetated with effective cover. Additional maintenance or treatment is not necessary.	2008	2009	RCI Photo documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary	Yes
90	Ski Run Segment Revegetation	NV-5 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
PHASE III								

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
CA-1								
91	Upmombo1-2; MOMBOMED1- 5	Mombo (Run G6) and Mombo Meadows (Run G5)	Extend Lift A	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
92	R268	J Lift Access Road	Construct Lift J	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
93	R159, R159A, R160; PIONRPMA1-2	Pioneer Water Tank Road/Pioneer Poma	Replace Lift N (Implemented in 2008)	Road Maintenance; Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring Lift replaced in 2008. Road to old water tank was decommissioned and fully recontoured in 2011. Also, ski run along Pioneer Poma got full restoration treatment in 2013 (all water bars removed).	2018	2013	RCI Photo Documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary	Yes
94	R76-R80	Creek Station	Patsy's Hut/Snow Beach Expansion (Implemented in 2010)	Road Maintenance; Maintenance of BMPs (waterbars and sediment basins) and Revegetation of lift areas; Forest Service to advise as to need for Pre- and Post project maintenance Road is treated annually as part of opening summer mountain access Daily Summer dust abatement watering program. Umbrella Bar was relocated in 2010. Road segments 76-80 were treated in 2010 and 2011.	2010	On-going	RCI Photo Documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary	Yes

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
95	R90-R94/I5-4-6	Sky Meadows East/Run I1	Replace Lift I	Road Maintenance; Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
96	Ski Run Segment Revegetation	CA-1 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
CA-4								
97	Ski Run Segment Revegetation	CA-4 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
CA-6 --	No Project		Relocate Snowmaking Building		--	--		No Project Required
98	LrGnbl1-3	Run B2	Replace California Lodge	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
99	Ebow11-5	Run B1	Replace Lift A	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
100	CA Parking Lot		Kid's Camp at CA Base (Implemented 2008)	Maintenance of Parking Lot BMPs	On-going	On-going		Yes
101	WbolPom1-5	Runs K1 and K2	Replace Lift K	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
102	WbolPom1-5	Runs K1 and K2	Replace Lift L	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
103	WbolPom1-5	Runs K1 and K2	Replace Lift M	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	--	--		Future Capital Project
104	Ski Run Segment Revegetation	CA-6 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
CA-7								
105	R264-R267	Analyze effects of change in use from emergency to transport	Construct Mid-station Restaurant	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
NV-1								
106	R272-275	Sand Dunes Access Road	Construct Sand Dunes Restaurant/Lodge/Access Road	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
107	R594-R596	Orion's Road	Construction Sand Dunes Restaurant Lodge/Access Road	Segments to be decommissioned upon completion of Sand Dunes Access Road	--	--		Future Capital Project
108	R622-R627	Mott Canyon Base	Replace/Relocate Lift DD	Pre-project creek crossing enhancement/Post-project road maintenance; Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
109	R616-617	Mott Canyon Top	Replace/Relocate Lift DD	Decommission road segments upon removal/relocation of lift	--	--		Future Capital Project
110	Ski Run Segment Revegetation	NV-1 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
NV-2+5								

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
111	Ski Run Segment Revegetation	NV-2+5 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
NV-3								
112	R250-R250A; R500-R504	Von Schmidt's To East Peak	Expand East Peak Maintenance	Forest Service to advise as to need for Pre- and Post project maintenance	--	--		Future Capital Project
113	Edgewood Bowl Maintenance	Edgewood Bowl Maintenance	Construct Boulder Base Area and Skiers Services Building	Maintenance of SEZ Project	2011	2011		Future Capital Project
114	Edgewood Bowl Maintenance	Edgewood Bowl Maintenance	Expand Deck at Existing Lodge	Maintenance of SEZ Project	2012	2012		Future Capital Project
115	Ski Run Segment Revegetation	NV-3 Ski Run segments	General maintenance of revegetation projects - No Records Kept	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
NV-4								
116	Ski Run Segment Revegetation	NV-4 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance
NV-4A								

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
117	U3	Ski Run U3	Construct U3/Snowmaking (Implemented in 2010)	Adapted and Approved ESRHRP Prescriptions Ski Run U3 (Outlaw Trail) implemented without snowmaking	2010	2011	RCI Photo Documentation, BMP Effectiveness Monitoring Annual Report, Construction Season Summary	Yes
118	U4	Ski Run U4	Construct U4/Snowmaking	Adapted and Approved ESRHRP Prescriptions	--	--		Future Capital Project
NV-5								
119	Z1-1,2,3	Run Z1	Construct Z1/Snowmaking	Adapted and Approved ESRHRP Prescriptions	--	--		Future Capital Project
120	Z2-1,2,3	Run Z2	Construct Z2/Snowmaking	Adapted and Approved ESRHRP Prescriptions	--	--		Future Capital Project
121	Z3-1,2,3	Run Z3	Construct Z3/Snowmaking	Adapted and Approved ESRHRP Prescriptions	--	--		Future Capital Project
122	Z4-1,2,3,4	Run Z4	Construct Z4/Snowmaking	Adapted and Approved ESRHRP Prescriptions	--	--		Future Capital Project
123	Z5-1	Run Z5	Construct Z5/Snowmaking	Adapted and Approved ESRHRP Prescriptions	--	--		Future Capital Project
124	Z7-1,2,3	Run Z7	Construct Z7/Snowmaking	Adapted and Approved ESRHRP Prescriptions	--	--		Future Capital Project

PHASE I, II and III Restoration					Project Recordkeeping			
Watershed/ Project Number	Sediment Source (CWE Model)	Road/Run/ Facility Name	2007 Master Plan Capital Project Linkage	CWE Restoration Project Description	Project Start Date	Project Completion Date	Data Source	CWE Program Implementatio n Credit
125	Ski Run Segment Revegetation	NV-5 Ski Run segments	General maintenance of revegetation projects	Maintenance of Ski Run BMPs (waterbars and sediment basins) and Revegetation; Determined annually as part of the revised Environmental Monitoring Program and Updated Discharge Permit General Ski Area Monitoring	On-going	On-going		On-going Ski Run Maintenance

Summary of USFS %ERA analyses for Heavenly Ski Resort.

Basin	Area (ac)	MUSLE 2013 %ERA ¹	2013 %ERA ²	MPA-07 %ERA ³	MPA-07 + Epic/Disc. %ERA ⁴
CA-1	1564	2.27	3.99	4.29	4.49
CA-4	139	4.57	2.44	2.44	2.44
CA-6	417	4.46	7.38	7.37	7.41
CA-7	305	0.23	0.71	1.09	1.19
NV-1	643	12.22	3.37	3.80	4.24
NV-1 w/o Mott Cyn	593	ND ⁵	2.38	2.86	2.86
Edge-1	479	ND	0.53	ND	0.61
Edge-2	825	ND	4.72	ND	4.77
NV-2	652	3.16	4.04	4.79	4.79
NV-3	408	2.37	5.48	5.57	5.61
NV-4	79	9.52	9.43	9.86	9.86
NV-4A	237	0.23	0.96	1.11	1.11
NV-5	177	2.42	3.70	7.18	7.19
NV-2+5	829	3.06	3.92	5.30	5.70

¹ MUSLE program, or sediment-yield based estimate of %ERA for existing conditions (2013).

² Simple coefficient method for estimating %ERA for existing conditions in 2013.

³ Simple coefficient method for estimating %ERA for the 2007 MPA anticipated buildout.

⁴ Simple coefficient method for estimating %ERA for the 2007 MPA anticipated buildout including the EPIC/Discovery Park.

⁵ Not determined.

ERA Coefficients	
Skiruns	0.15
Roads/parking	1.0
General Impervious	0.8

Heavenly Mountain Resort							
Epic Discovery Activities Proposed Mountain Bike Trails by Watershed							
13-May-14							
Trail Segment	Segment Length (lineal feet)	Length in CA1	Length in NV1	Length in NV2+5	Trail Width		
Beginner Trails							
B1-1	992		877	115	6		
B1-2	3,146		3146		6		
B1-3	822		822		6		
B1-4	3,311		3311		6		
B1-5	1,529		1074	455	6		
B1-6	1,930			1930	6		
B1-7	1,502			1502	6		
B1-8	3,326			3326	6		
B2	1,419		348	1071	6		
B3-1	900	900			6		
B3-2	1,624	1624			6		
B4-1	2,172	172		2000	6		
B4-2	1,543			1543	6		
B4-3	2,783			2783	6		
B4-4	1,094			1094	6		
Subtotal	28,093	2,696	9,578	15,819			
Intermediate Trails							
I1-1	2,364		2364		6		
I1-2	912		912		6		
I1-3	1,684		798	886	6		
I2	629		629		6		
I3	934			934	6		
I4	2,088			2088	6		
Subtotal	8,611	0	4,703	3,908			
Advanced Trails							
A1-1	1,589		1589		3		
A1-2	1,929		1929		4		
A1-3	3,585		3585		3		
A1-4	963		841	122	4		
Subtotal	8,066		7,944	122			

Adventure Peak Epic Discoveries

Trail Designation on Plans	Activity	Length	Length in CA1	Area in CA1	Length in East Watershed	Length in CA7	Area in CA-7	Trail Width
P8	Alpine Coaster	60	60	360			0	6
P9		75	75	450			0	6
P10	Mid Station Canopy Tour	787		0		787	1574	2
M11	Mid Station Canopy Tour	1196		0	1,150	46	92	2
M12	Mid Station Canopy Tour	163		0	387	0	0	2
M13	Mid Station Canopy Tour	387		0	547	194	0	2
M14	Mid Station Canopy Tour	547		0	755	221	0	2
M15	Mid Station Canopy Tour	194		0			0	2
M16	Mid Station Canopy Tour	755		0			0	2
M17	Mid Station Canopy Tour	221		0			0	2
M18	Mid Station Canopy Tour	298	194	388		104	0	2
P19	Mid Station Canopy Tour	75	34	68		41	0	4
P20	Mid Station Canopy Tour	617	617	2468			0	4
P21	Sky Cycle Canopy Tour	686	686	2744			0	4
M22	Sky Cycle Canopy Tour	3562	3331	6662		621	0	2
M23	Sky Cycle Canopy Tour	839		0		839	0	2
M24	Sky Cycle Canopy Tour	125	43	86		82	0	2
P25	Kiddie Zipline	34	34	136			0	4
P26	Kiddie Zipline	33	33	132			0	4
P27	Disc Golf	1835	1835	3670			0	2
Path Coverage Total		12,879	6,942	17,164		5,104	833	1,666

East Peak Lake Basin Epic Discoveries

Trail Designation on Plans	Activity	Length (ft)	Length in CA1	Area in CA1	Length in NV2+5	Area in NV2+5
F28	East Peak Lodge Hiking Trail	605	605	1210		0
F29	East Peak Lodge Hiking Trail	2078		0	2,078	4156
P30	East Peak Lodge Hiking Trail	661		0	661	1322
P31	East Peak Lodge Hiking Trail	2650		0	2,650	5,300
P32	East Peak Canopy Tour	689		0	689	2676
P33	East Peak Canopy Tour	21		0	21	84
M34	East Peak Canopy Tour	529		0	529	1058
M35	East Peak Canopy Tour	371		0	371	742
P36	East Peak Canopy Tour	786		0	786	1572
P37	East Peak Water Activities	133		0	133	532
Path Coverage Total		8,503	605	1,210	7,898	17,442

Sky Meadows Basin Epic Discoveries

Trail Designation on Plans	Activity	Length (ft)	Length in CA1	Area in CA1	Out of Basin
F1	Sky Basin Zip Tour	2301	2301	4602	
M2	Sky Basin Zip Tour	2440	2440	4880	
M3	Sky Basin Zip Tour	6402	6402	12804	
P4	Sky Basin Zip Tour	450	450	1800	
P5	Sky Meadows Challenge Course	150	150	600	
P6	Sky Meadows Challenge Course	71	71	142	
P7	Ridge Run Lookout Tower	164	58	232	
Path Coverage Total		11,978	11,872	25,060	106

Heavenly TRPA In-Basin Land Coverage Summary
Estimated New Land Coverage for Proposed Action and Alternatives

New Coverage		Proposed 1a	Proposed 1b
Adventure Peak Epic Discoveries			
Alpine Coaster Forest Flyer	Buildings (Terminal, bull wheels, attendant's shed) Coaster Trails Parking	3,170 1,256 810 432	
Sky Cycle	Structures Trails and Queuing Areas Maintenance Road	1,511 13,339 4,898	
Mid Station Canopy Tour	Trails and Queuing Areas Structures	11,538 80	
In-fill Activities	Trails Mountain Bike Skills Park Concrete Pad for Bike Rental Area	3,938 15,182 2,000	
Total Adventure Peak Epic Discoveries		58,154	
East Peak Basin Epic Discoveries			
East Peak Lodge Hiking Trail (in Basin Segments)	Trails	1,210 15,144	
Mountain Bike Park (in Basin Trail Segments B3-1 and B3-2)		16,354	
Total East Peak Basin Epic Discoveries			
Sky Meadows Basin Epic Discoveries			
Sky Basin Coaster		6656	370
Sky Basin Zip Line	Trails and Queuing Areas	24,150	168
Sky Meadows Challenge Course	Trails	138	604
Mountain Excursion Tour	Parking/Pullouts	440	
Ridge Run Lookout Tower	Sky Express Deck Expansion Structures Parking/Pullouts Trails	1,000 992 440 656	
Total Sky Meadows Basin Epic Discoveries		27,816	
Total New Land Coverage		102,324	772

Panorama Trails		Length (ft)	Area (sq ft)
CA-1		5467	16401
CA-6/7		3208	9624
CA-7		4634	13902
Un-named between CA-7 & NV-3		15619	46857
NV-1		4139	12417
NV-3		3042	9126
NV-2+5		5917	17751
NV-4a		28	84
NV-5		576	1728

Sq. Ft	Parking/Rds	Structures
Basin CA-1 Trails	73,725	8,210
Basin CA-1 Trails	1,69	0.16

already included from Mtn bike tab

CA-1