



I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Landscape Architect under the laws of the State of Minnesota.

PRINT NAME: KENNETH J. GRIESHABER

SIGNATURE:
DATE: 3/4/2024
LICENSE #: 24860

REVISIONS				
NO.	DATE	BY	CHKD	APPR

DRAWN BY J. FILLMORE

DESIGNED BY T. WEGNER

CHECKED BY K. GRIESHABER

COMM. NO. 16340

BRAEMAR PARK TRAIL IMPROVEMENTS

CITY OF EDINA MN

OVERALL LAYOUT PLAN

SHEET

L2.0

GENERAL NOTES:

1. STATE LAW: 48 HOURS BEFORE EXCAVATION BEGINS CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 FOR FIELD LOCATION OF UNDERGROUND UTILITIES.
2. CONTRACTOR SHALL FURNISH, INSTALL, AND MAINTAIN ALL NECESSARY TRAFFIC CONTROL DEVICES TO THE SATISFACTION OF THE OWNER.
3. CLEAR AND GRUB VEGETATION WITHIN CONSTRUCTION LIMITS AND AS REQUIRED TO CONSTRUCT THE PROPOSED IMPROVEMENTS. VERIFY LIMITS WITH OWNER.

EROSION CONTROL NOTES:

1. THE CONTRACTOR SHALL INSTALL EROSION CONTROL MEASURES AS SHOWN ON THE PLANS AND AS REQUIRED TO PREVENT SILT MIGRATION PRIOR TO BEGINNING CONSTRUCTION. THESE MEASURES SHALL INCLUDE INLET PROTECTION AT ALL STORMWATER INLETS RECEIVING RUN OFF FROM THE PROJECT SITE.
2. THE CONTRACTOR SHALL PROVIDE AND MAINTAIN A 30' WIDE X 50' LONG ROCK ACCESS DRIVE FOR THE DURATION OF CONSTRUCTION. THE CONTRACTOR SHALL REMOVE THE ACCESS DRIVE AND RESTORE ALL AREAS DISTURBED BY CONSTRUCTION ACTIVITIES AND ACCESS UPON COMPLETION OF CONSTRUCTION.
3. THE CONTRACTOR SHALL INSTALL AND MAINTAIN CATEGORY 20 EROSION CONTROL BLANKET ON

ALL SLOPES 3:1 OR STEEPER.

4. THE CONTRACTOR SHALL SEED DISTURBED GROUND FROM TRAIL BUILDING OPERATIONS WITH TEMPORARY SEED MIX. REFER TO SPECIFICATIONS FOR ADDITIONAL INFORMATION AND REQUIREMENTS.

TREE PROTECTION NOTES:

1. PROTECT ALL TREES IN IMMEDIATE VICINITY OF WORK. NO PARKING VEHICLES OR EQUIPMENT UNDER DRIP LINES OF TREES.
2. NO TREES SHALL BE REMOVED TO CONSTRUCT TRAILS. APPROVAL FROM LANDSCAPE ARCHITECT/OWNER IS REQUIRED PRIOR TO ANY UNEXPECTED TREE REMOVAL.

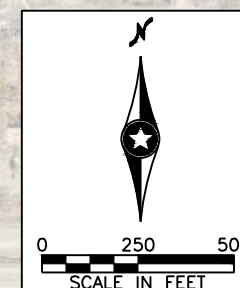
NORTHWEST SEGMENT LAYOUT PLAN - SEE SHEET L2.1

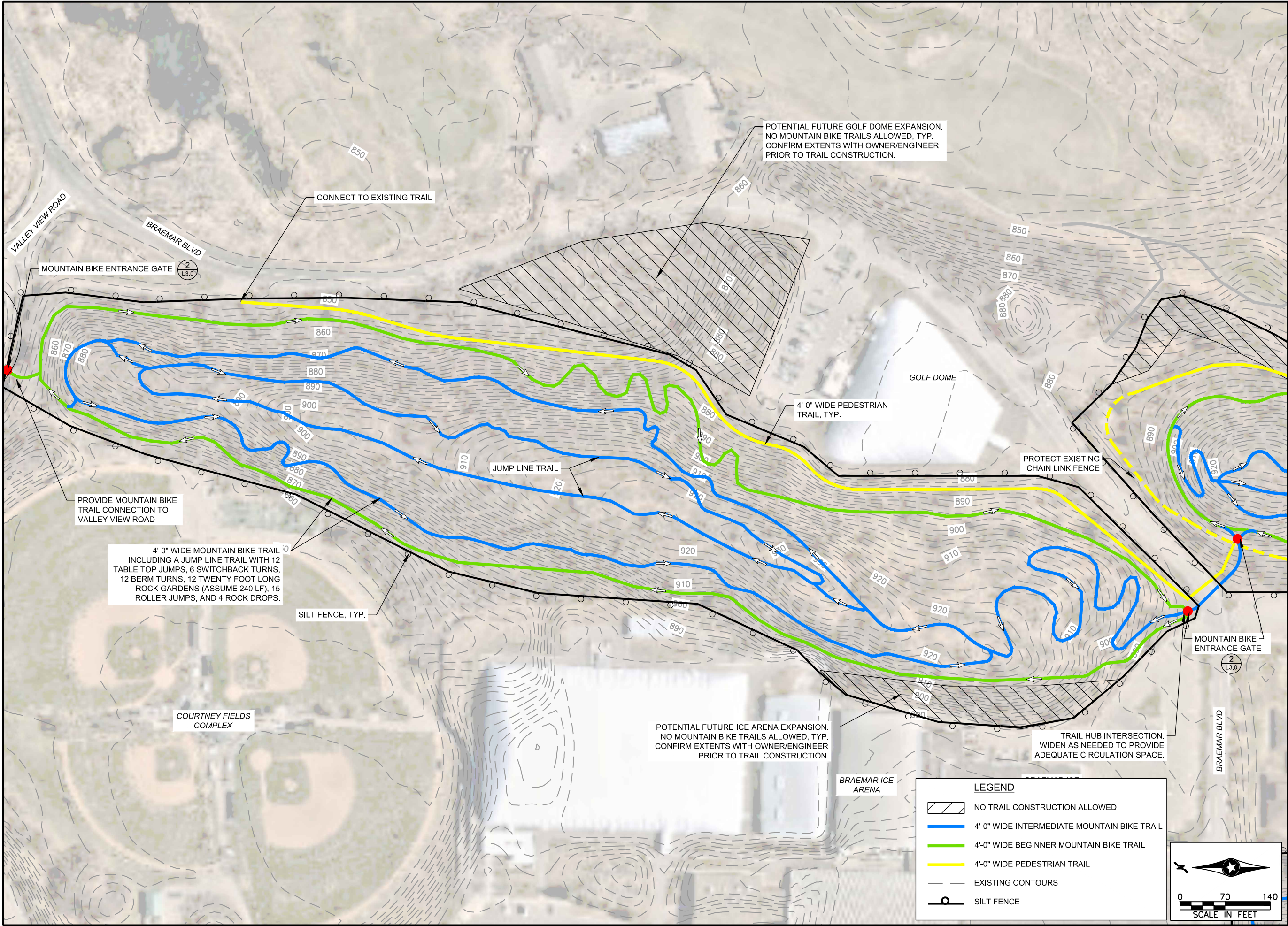
EAST SEGMENT LAYOUT PLAN - SEE SHEET L2.3

SOUTHWEST SEGMENT LAYOUT PLAN - SEE SHEET L2.2

LEGEND

- NO TRAIL CONSTRUCTION ALLOWED
- 4'-0" WIDE INTERMEDIATE MOUNTAIN BIKE TRAIL
- 4'-0" WIDE BEGINNER MOUNTAIN BIKE TRAIL
- 4'-0" WIDE PEDESTRIAN TRAIL
- EXISTING CONTOURS
- SILT FENCE





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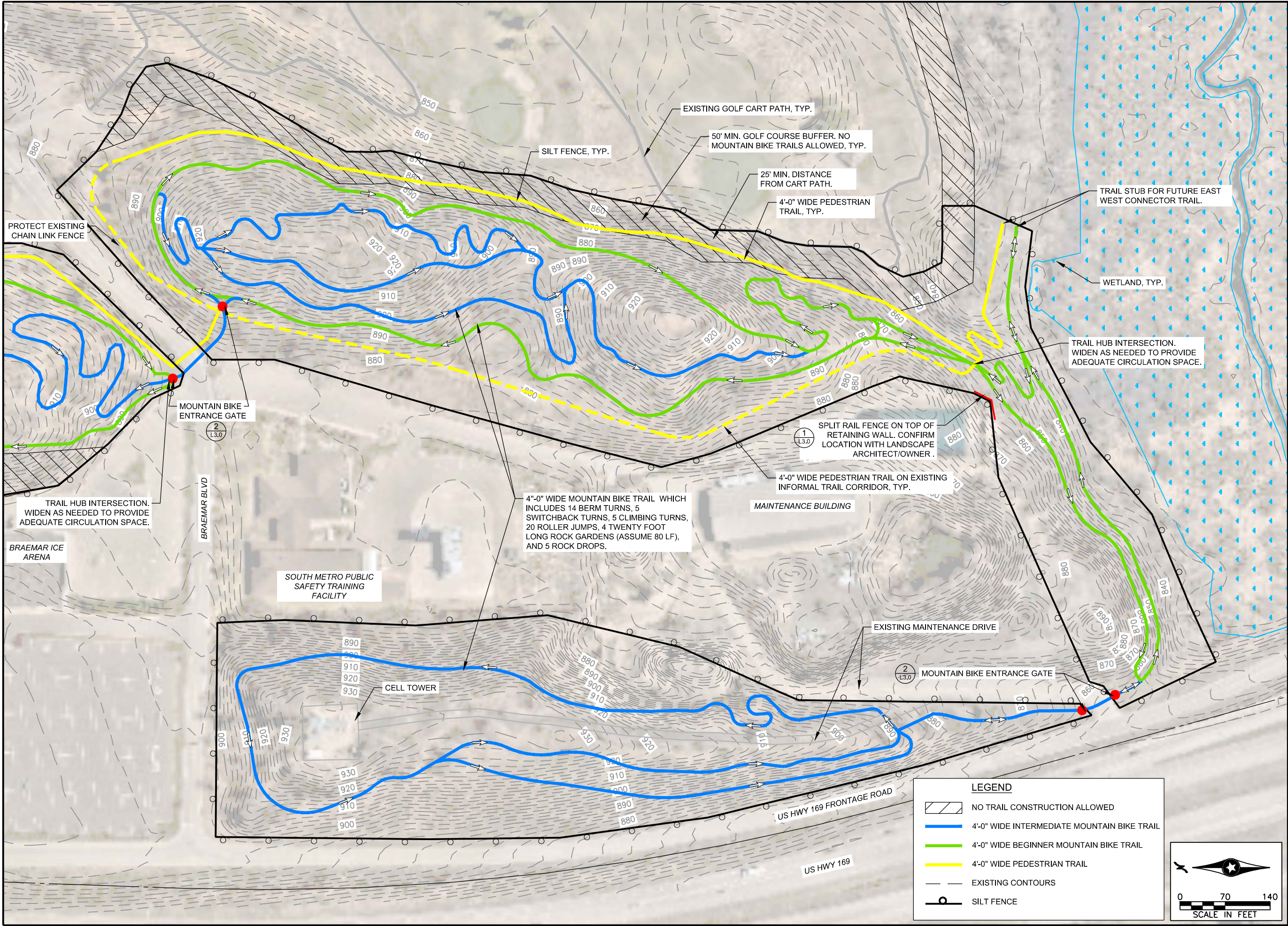
BRAEMAR PARK TRAIL IMPROVEMENTS

CITY OF EDINA MN

NORTHWEST SEGMENT LAYOUT PLAN

SHEET

L2.1



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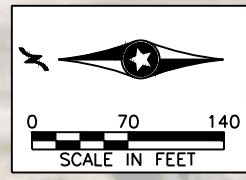
BRAEMAR PARK TRAIL IMPROVEMENTS
CITY OF EDINA MN
SOUTHWEST SEGMENT LAYOUT PLAN

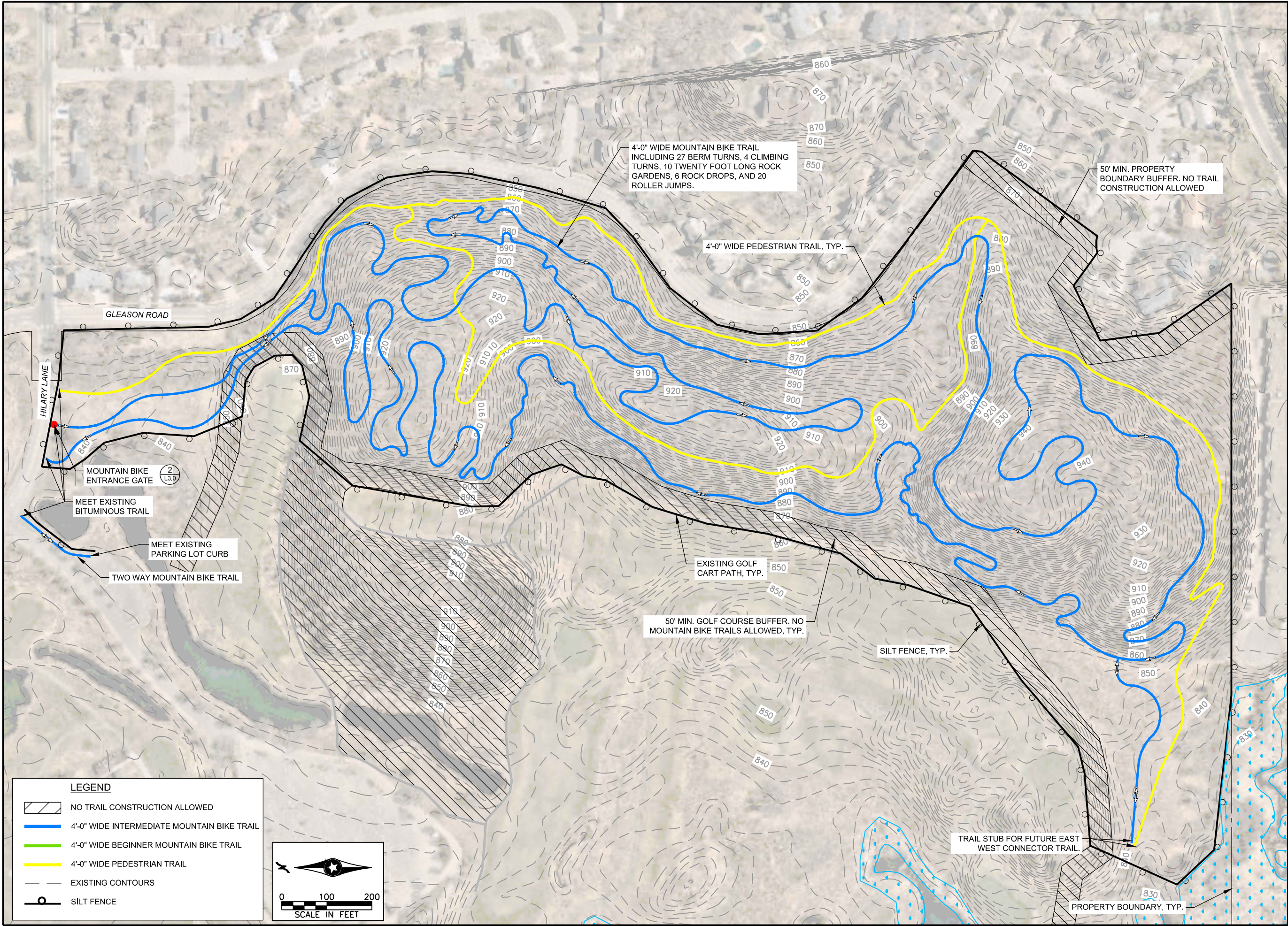
SHEET

L2.2

LEGEND

- NO TRAIL CONSTRUCTION ALLOWED
- 4'-0" WIDE INTERMEDIATE MOUNTAIN BIKE TRAIL
- 4'-0" WIDE BEGINNER MOUNTAIN BIKE TRAIL
- 4'-0" WIDE PEDESTRIAN TRAIL
- EXISTING CONTOURS
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BRAEMAR PARK TRAIL IMPROVEMENTS

CITY OF EDINA MN

EAST SEGMENT LAYOUT PLAN

SHEET

L2.3

Mountain Bike Trail Design Sheet 010 // TTF: Berm Turn



Description

A berm is a banked and curved cornering feature on a trail that provides support for the rider when turning a corner allowing them to turn in a smooth manner. A berm allows the user to maintain speed while cornering. The features are usually used on flat or downhill sections of trail. A blue graded berm will be generally open and shallow with more difficult berms encompassing tighter angles, steeper surfaces and higher entrance speeds. The speed at which a berm is ridden increases with rider skill and experience. Berms may also be used as trail feature in themselves, with a series of berms on a descent being a typical feature of modern bike trails.

Design Comments

It is important to ensure that a berm is continued around a bend to a point where the rider is able to exit safely on the line of the trail. Riding the feature during construction will indicate the correct exit point much better than design sketches. The trail formation specification needs increasing for berms that are to be ridden at higher speeds or are on steep gradients.

Construction Methodology

Berms are created by either constructing a bank from earth or stone or identifying an existing bank/gradient that has suitable properties for the trail. A basic 20-45° bank should be formed in a rough semi-circle with an inverted dished face and a suitable turning angle for the grade of trail. An excavator should sit on top of the bank and distribute local stone into the face of the feature. A whacker plate may be used to compact the soil into the face of the berm, which should appear sealed when finished with no loose soil. An appropriate drainage area on the inside of the berm should be excavated to ensure water is shed successfully off the surface.

Construction Materials

Local earth/soil

Construction Machinery

- Hand Tools
- Dumper
- 360 Excavator
- Whackerplate



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BRAEMAR PARK TRAIL IMPROVEMENTS

CITY OF EDINA MN

MISCELLANEOUS DETAILS

SHEET

L3.1

Mountain Bike Trail Design Sheet 100 // TTF: Rollers



Description

A roller is a trail feature where the trail surface rises then falls smoothly, which should be rideable without pedalling. As the name suggests, rollers are designed to be rolled over. Skillful riders can use rollers to gain speed and control by ‘pumping’ them. Rollers can occur on the trail singularly, or in series, depending on the grade of trail. On blue grade trails, rollers should generally be singular, although multiple rollers could be used if there is a minimum of a bike length gap between them.

Construction Methodology

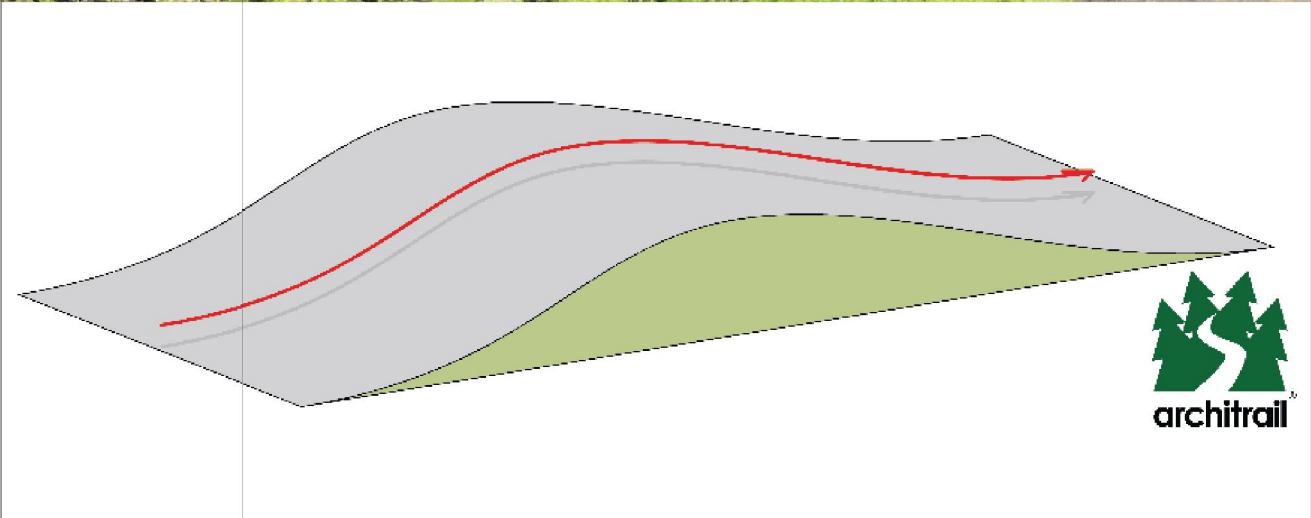
Rollers can be constructed from material on site or from imported material from local sources. Rollers can be built up on flat terrain, or use naturally occurring features. If built on flat terrain, a roller can be expected to use typically 0.5t of sub base. Machinery should be used to import and manipulate material into the appropriate spacing and heights. The shape of the rollers should then be refined using hand tools. The trail surface should be built according to specifications.

Construction Materials

Local earth/soil

Construction Machinery

Hand Tools
Dumper
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Whacker Plate



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BRAEMAR PARK TRAIL IMPROVEMENTS

CITY OF EDINA MN

MISCELLANEOUS DETAILS

SHEET

L3.2

Mountain Bike Trail Design Sheet 101 // TTF: Jump



Description

A jump is an exciting trail feature allowing riders to take off from the ground and land safely using their momentum. The larger the feature, the more severe the grade of jump. The entrance to and exit from a ramp is usually long which provides a safe environment within which to gain momentum, undertake the feature and land safely. Jumps may be constructed on all gradients, making them ideal trail features.

Design Comments

Poorly constructed jumps are dangerous. Focus should be on creating the correct entrance and exit to the feature which will enable users to take the jump at different speeds requiring different skill levels.

Construction Methodology

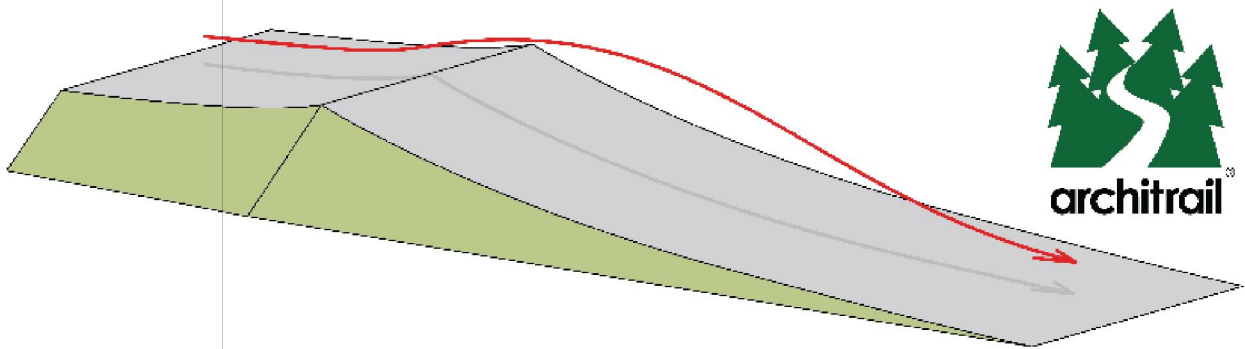
An excavator should construct a solid ramp out of local or imported earth. Dumpers may import material and ramps may be shaped roughly by an excavator, before being finished by hand and compacted using whacker plates. Rocks and boulders may be installed on the lip of the ramp to allow users to drop off or roll out of the jump if the feature is not to be 'jumped'. Clay or extra stone may be laid on the feature landing to reduce erosion caused by landing bikes. The route corridor at the entrance and exit to the jump should have a good line of sight.

Construction Materials

Locally won stone
Local earth/soil

Construction Machinery

Hand Tools
Dumper
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Whacker Plate



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MISCELLANEOUS DETAILS

SHEET

L3.3

Mountain Bike Trail Design Sheet 102 // TTF: Tabletop



Description

A tabletop is a jump feature allows riders to experience jumps with a gap between the take off and landing in a safe and controlled manner. The feature is fundamentally a take off ramp with a flat top and a downslope. The advantage of using this type of jump is that the gap is not mandatory allowing a rider to jump onto the flat top of the jump, working their way up to jumping to the downslope of the landing. The difference in tabletop design between the moderate (blue) and severe (black) grades of trail is focused on the gradient encountered on the up and down slopes, the height of ramp to be navigated and the overall length. Tabletops can be constructed out of earth or stone material. It should be noted that whilst tabletops allow riders of all abilities to attempt the jump, the lip of the take off is therefore more susceptible to erosion than jumps with mandatory gaps.

Design Comments

Dividing the entry route into two will provide opportunity to offer users different approach options to the same feature (e.g. steeper and cambered options for more difficult grades).

Construction Methodology

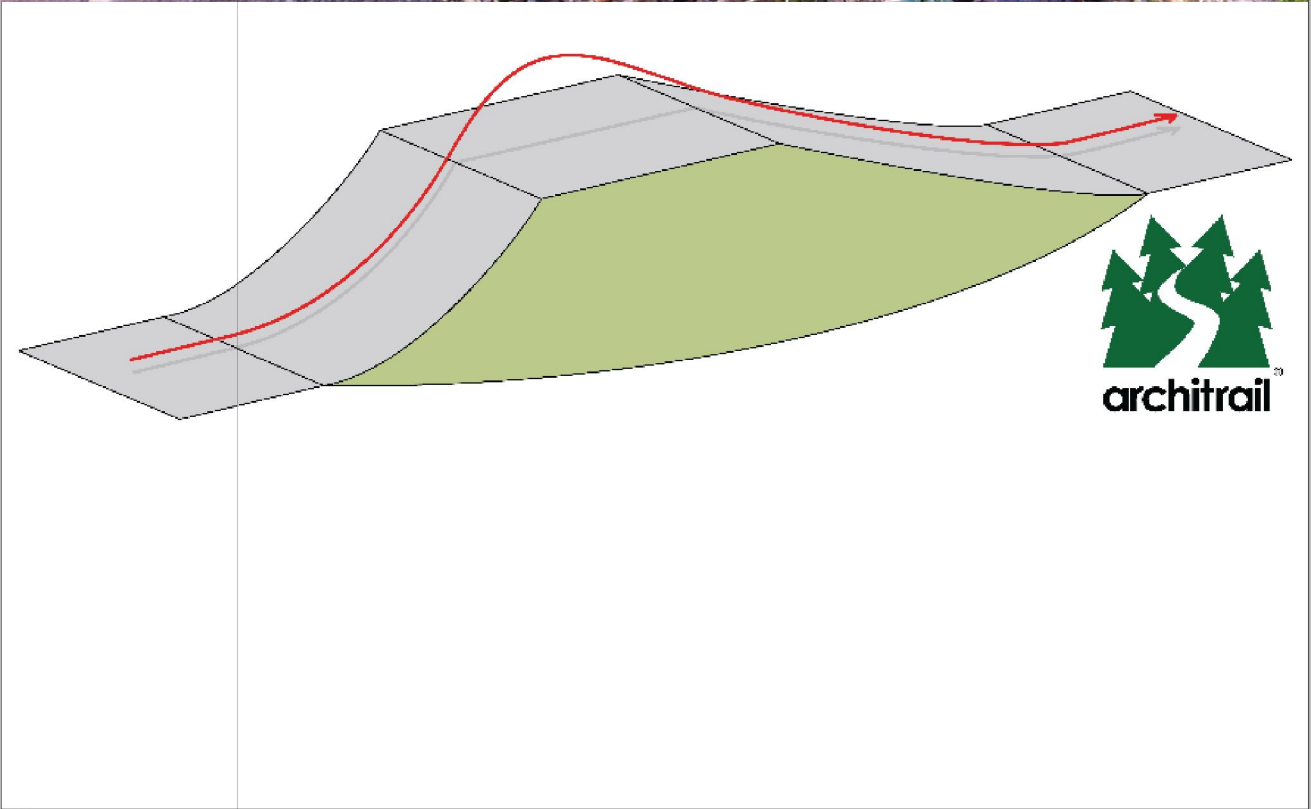
A tabletop feature is usually constructed from stone or earth that has been imported from appropriate local sources. An excavator should be used to form material into a flat topped mound of 10-20 feet long which has a side batter of no more than 45°. A dumper may be used to bring material onto the site if appropriate. The excavator should be used to compact the material at regular intervals until a tabletop is achieved. A final stone surface should be installed within a tray on top of the feature and compacted with a whacker plate so that the surface appears sealed to the naked eye.

Construction Materials

Local earth/soil

Construction Machinery

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Whacker Plate



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CITY OF EDINA MN

MISCELLANEOUS DETAILS

SHEET

L3.4

Mountain Bike Trail Design Sheet 110 // TTF: Grade Reversals



Description

Grade reversals are a feature that can be used when traversing a side slope where a full bench cut is required. The feature helps to maintain trail flow, add interest, control speed and shed water at strategic points across a traverse, by using the undulating trail gradient. The line of the trail can be descending, slightly ascending or flat. The gradient of grade reversals can vary hugely in length, height, gradient and frequency. Riders can gain speed by pumping the down sides of the reversals and carry momentum up the next incline before repeating. Grade reversals are also very useful for managing runoff on the trail surface, as water can be shed quickly from the troughs of the grade reversals. This avoids high volumes of water flowing on the trail surface and therefore reduces erosion. Grade reversals on a blue trail would typically have a wavelength of 50-80feet. Grade reversals on a blue trail are generally smooth and low, with more technical grade reversals encompassing shorter wavelengths, higher amplitudes and faster entrance speeds. The speed at which grade reversals are ridden, increases with rider skill and experience. For best practice, the trail gradient should always be less than half that of the side slope.

Design Comments

Routing the trail above large boulders and trees helps to provide natural demarcation and avoids undermining root systems.

Construction Methodology

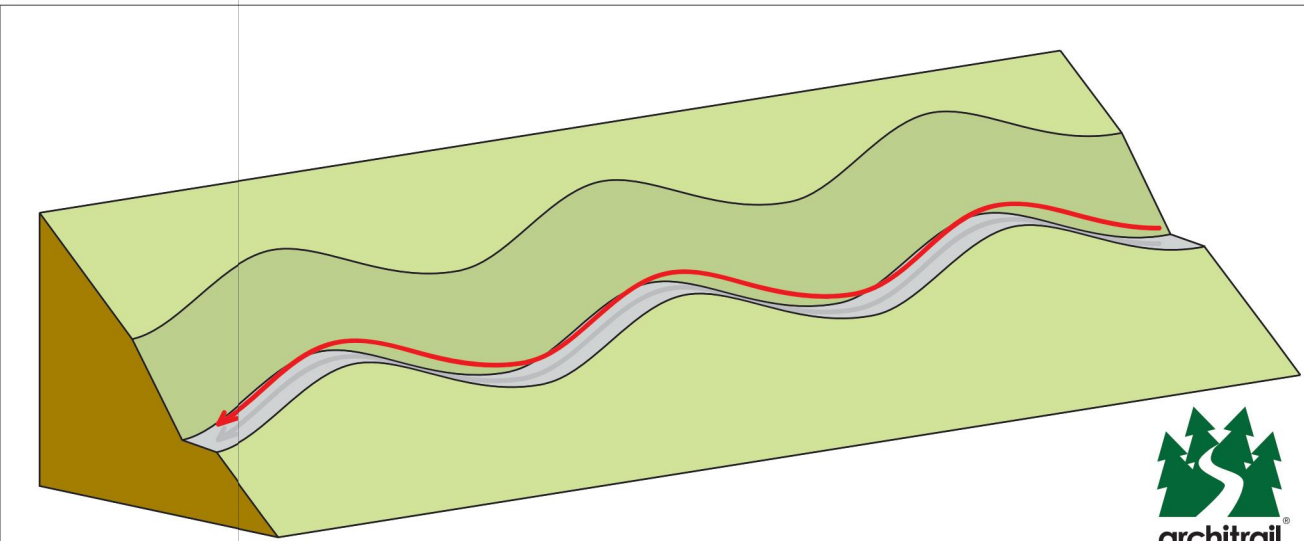
Create a full bench cut (either by creating a platform as the 360 excavator works its way along, or using walking excavator) and make sure the trail is constantly moving up or down. It is important to ensure that water can exit on the grade dips- a ditch and/or a culvert may be necessary. Once the shape is correct, a whacker plate should be used to compact the stone, which should appear sealed when finished with no loose stone.

Construction Materials

Local earth/soil

Construction Machinery

Hand Tools
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Whackerplate



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CITY OF EDINA MN

MISCELLANEOUS DETAILS

SHEET

L3.5

Mountain Bike Trail Design Sheet 201 // TTF: Rock Drop



Description

A rock drop off is a feature on the trail where the rider will undertake a step down from a high level to a lower level, defined by instantly losing vertical height over a trail edge. Commonly stone is used in drop offs features as it is not subject to rot or erosion and can take continual braking and impacts. At the moderate (blue) end of the scale, a drop off may be no more than a 18" step down which will cause the rider a minor disturbance in the ride. At the severe (black) end of the scale the drop off may be several metres, which will require significant commitment to the feature and high levels of skill. It should be noted that a landing slope might be required for larger drop offs.

Design Comments

Drop offs need to have a suitable landing area installed as part of the feature. This is dependent on the exit speed and next trail feature. This will prevent erosion of the trail surface immediately following the feature, which increases durability.

Construction Methodology

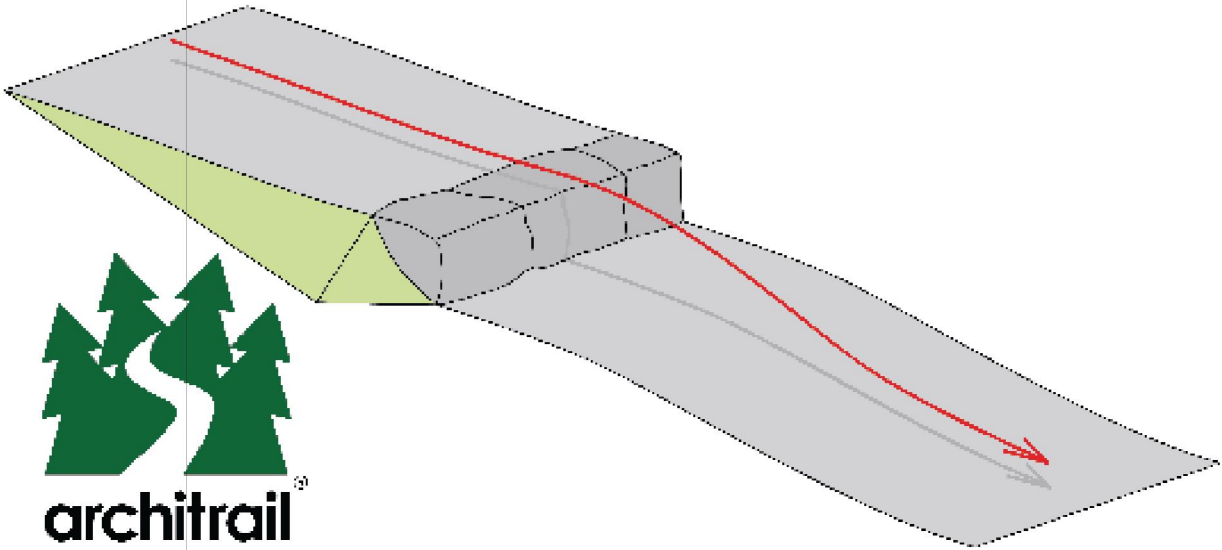
A drop off may be constructed from boulders and large rocks /slabs found on site or have been imported from appropriate local sources. Natural rock features may also be adapted to create the features . Ap-pro priate machinery should be used to move earth/stone to create desired levels for height differences and excavate a bed into the existing route surface into which boulders may be set. A dumper may be used to bring boulders on to the site and tip them in rough positions. Hand tools may be used by multiple labourers to align the boulders into final position. Boulders should be set with at least 30% of their mass within the ground to avoid movement.

Construction Materials

Locally won stone
Local earth/soil

Construction Machinery

Hand Tools
Dumper
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CITY OF EDINA MN

MISCELLANEOUS DETAILS

SHEET

L3.6

Mountain Bike Trail Design Sheet 202 // TTF: Rock Garden



Description

A rock garden is a technical feature where rocks and small boulders are installed into the trail surface in close proximity to each other providing unavoidable small obstacles. This roughened surface is fun to ride as it tests bike handling skills as well as slowing riders down over the section of trail. The difference between moderate (blue) and severe (black) rock gardens may be down to gradient on which the rocks are set, the size of the rocks (height above ground) or the distance between the individual rocks, which limits navigable options.

Design Comments

Some users may try and avoid the rock garden sections due to the uncomfortable nature of the ride. The use of larger boulders or timber at the edge of the trail will prevent users from diverting off the line of the trail.

Construction Methodology

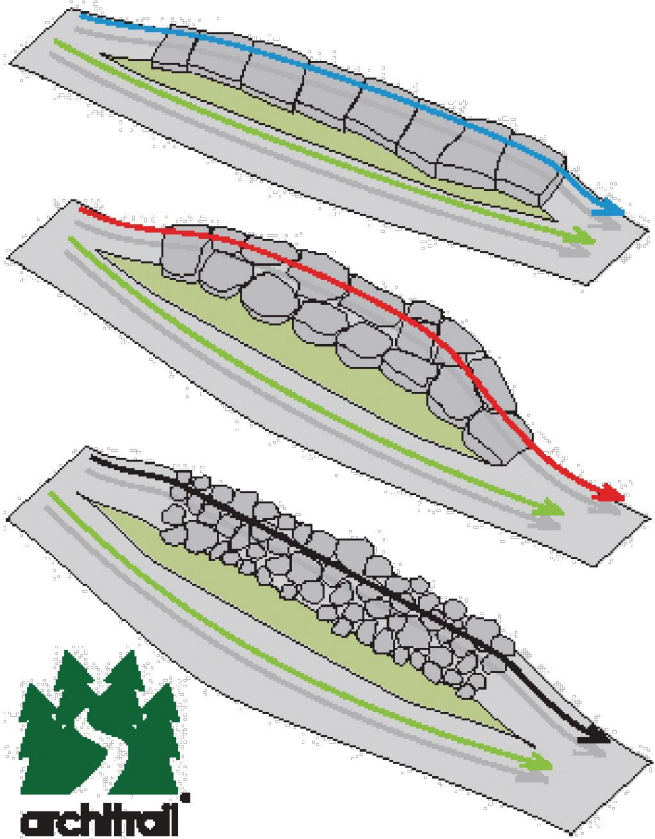
A rock garden should be constructed using locally won or imported rocks which are no bigger than 2'x2'. Rocks may be imported using a dumper or tracked wheelbarrow. The rocks should be installed to a shallow depth by hand in the existing trail surface. Rocks should be positioned in appropriate positions relating to the grade of trail. A surface/wearing course should then be installed over the rocks, which should be compacted down with hand tampers. The finished trail should be finished with at least 40% of the rock mass within the ground. This will prevent movement as bikes run over the rock sections.

Construction Materials

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Construction Machinery

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MISCELLANEOUS DETAILS

SHEET

L3.7

Mountain Bike Trail Design Sheet 403 // TTF: Climbing Switchback



Description

Grade reversals are a feature that can be used when traversing a side slope where a full bench cut is needed. The feature helps to maintain trail flow, add interest, control speed and shed water at strategic points on a traverse, by reversing the trail gradient a number of times over a distance. The line of the trail can be descending, slightly ascending or flat. The gradient of grade reversals can vary hugely in length, height, gradient and frequency. Riders can gain speed by pumping the down sides of the reversals and carry momentum up the next incline before repeating. Grade reversals are also very useful for managing runoff on the trail surface, as water can be shed quickly from the troughs of the grade reversals. This avoids high volumes of water flowing on the trail surface and therefore reduces erosion. Grade reversals on a blue trail would typically have a wavelength of 5'-8'. Grade reversals on a blue trail are generally smooth and low. For best practice, the trail gradient should always be less than half that of the side slope.

Design Comments

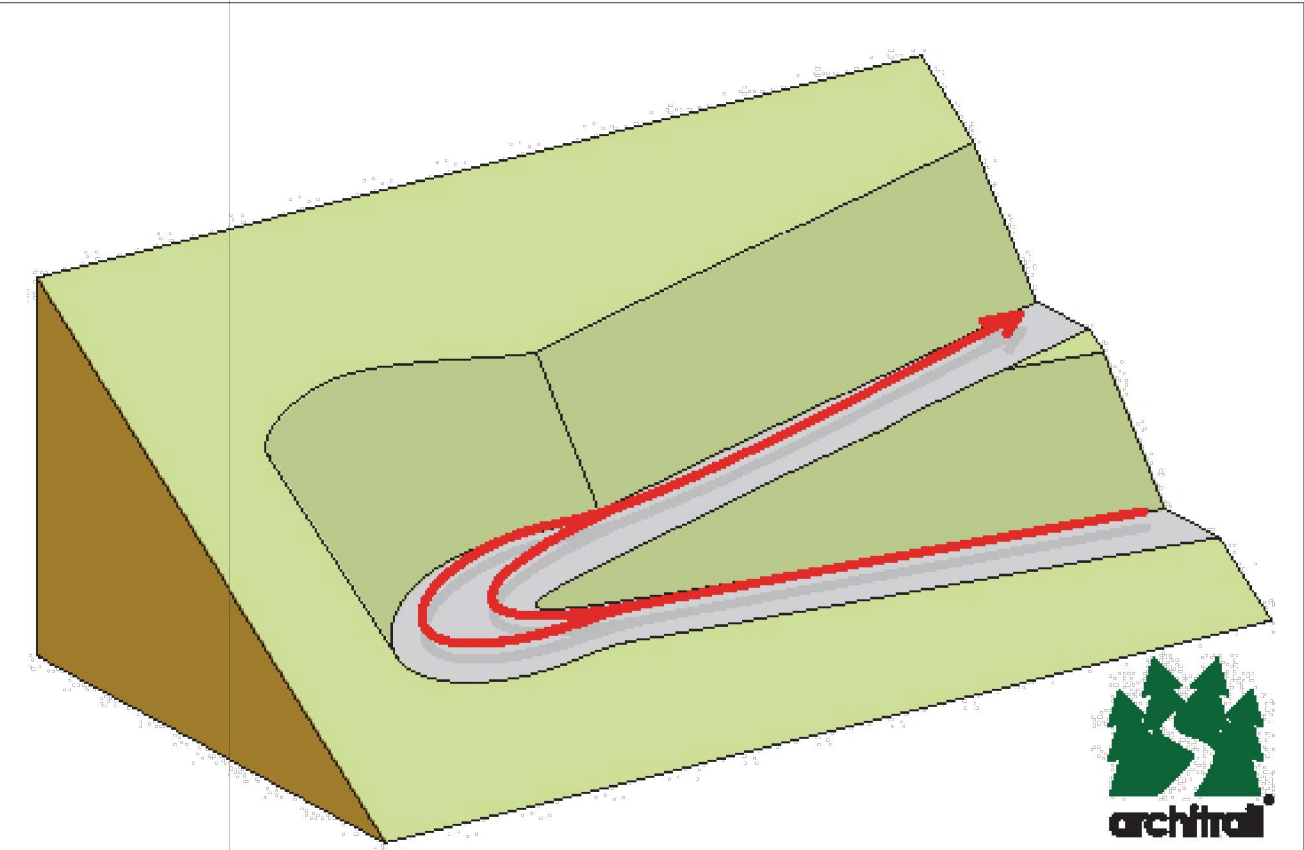
The turning pad should be no less than 10' diameter in order to give the rider enough space to turn.

Construction Methodology

Construction starts at the end of a bench cut trail where the direction needs to be reversed. The lower leg should come up to the pad in the form of an out-sloped ramp to shed water. Then the pad itself should be slightly domed in shape in order to shed water. Revetment can be used to sure up the turning pad on the lower side. The upper leg of the trail coming out of the turn will be gently in-sloped for 30'-50' above the turning pad so that water will drain off the backside of the turn. Building all components of the feature together ensures that the lower half will be firmly tied into the upper half.

Construction Materials
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Construction Machinery
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L3.8