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J1. PLANNING GUIDELINES

The following list of Standards are intended to assist in the development of a high-quality and fully-integrated trail system that links residential development areas with community open spaces and other recreational lands. It includes legal requirements, official policies, established standards and practices, and desirable standards.

J1.1 Trail Classification

1. **Regional Trails**
   a) Provide external link from subdivisions to other amenities.

   b) Link together the main parks, recreational facilities, and reserve areas between subdivisions.

   c) Link together communities.

   d) Shown schematically in the Area Structure Plan, Outline Plan or other County approved plans.

   e) Required to be asphalt.

2. **Local Trails**
   a) Link to regional trails from subdivisions.
   b) Link to amenities within subdivisions.
   c) Required to be asphalt, unless otherwise approved by the County.

J1.2 Alignments

1. Ensure regional trail alignments correspond to Area Structure Plans, Outline Plans and other County approved plans and documents.

2. Design network of trails within and through a subdivision at the Concept Plan stage.

3. Trails are to be located in designated municipal reserves.

4. Ensure local trails link directly or indirectly to regional trails.

5. Avoid sections ‘on-road’ in order to maximize continuity of trail system.

6. Spacing from the back of residential lot should be a minimum of 1m. Trails should be used to delineate private land from public lands.

7. Trail right-of-way must be a minimum of 5m.

J1.3 Frontage

Avoid routing trails along the front of residential lots.

J1.4 Road Crossing

1. Route trail to road intersections where possible.

2. Mid-block crossings are discouraged and permitted on internal subdivision roads only. If mid-block crossings occur, appropriate signage as approved by the County will be required.

3. Adjust subdivision layout to minimize the number of crossings.

4. Line up trail entrances to ensure visual continuity.

J1.5 Play Equipment Sites

1. Regional trails should not be within a minimum of 5m from play area surfaces.

2. Provide links from play equipment sites to trails.

J1.6 Parking Lots

1. Route trail around parking lots unless approved by the County.

2. Provide links from parking lots to trails.

3. Locate trail entrances at road access.

4. One handicap parking space for every five additional spaces.

5. Refer to standard drawing for typical layout.

J1.7 Natural Areas

1. Minimize damage to environmental reserve parcels and sensitive areas by careful trail route selection.

2. The County may require confirmation from a qualified professional that damage to the natural area is minimized.

3. Where possible, utilize trails as a buffer from development or natural areas.

4. Back-sloping gradient to be 2:1 to minimize disturbance.

J1.8 Amenities

1. **Washroom Facilities**

   All locations and sizes to be approved by the County; to be constructed using the following minimum standards:

   a) Floor, walls, roof and tanks shall be of all concrete design

   b) Minimum 100mm wall thickness, 115mm roof thickness and 130mm floor thickness

   c) All wall to floor interior seams shall have a minimum 25mm radius coving made of high strength grout

   d) Designed to withstand a 350 pounds per square foot snow load

   e) Designed to withstand a 400 pounds per square foot floor load

   f) Designed to withstand the effects of a 250 km/h (3 second gust) wind exposure

   g) Meet a turning radius inside toilet room of 1.5m

   h) Contain grab bars, toilet paper dispensers, hand sanitizer dispensers, steel doors, non-locking door handles and dead bolts.

   i) Incorporate design elements to reduce or eliminate odour

   j) All concrete surfaces shall be finished with a clear acrylic anti-graffiti sealer

2. **Picnic Tables**
   Place one table per two parking stalls.
   Install at other locations deemed necessary by the County

3. **Park Benches**
   Placed at all bathroom facilities and recreation areas.
   Generally placed along trail every 500m.
   Other locations deemed necessary by the County.

4. **Waste Receptacles**
   Placed adjacent to all park benches.
   One receptacle per three picnic tables.
   Other locations deemed necessary by the County.

5. **Fish Cleaning Stations**
   May be required at boat launches.
   Other locations deemed necessary by the County.

J2. DESIGN GUIDELINES

The objective of the design standards is to produce a safe and enjoyable trail incorporating the needs of both pedestrian and bicycle users. The focus is on recreational rather than transportation use with straight alignments to be avoided. The nature of multiple uses requires stringent attention to design details.

J2.1 Design Drawings

Design drawings must be submitted to the County for approval for all local and regional trails.

J2.2 Surface Materials

1. All regional trails are to be asphalt and are intended to accommodate both pedestrians and cyclists.

2. Local trails and trails oriented to pedestrian traffic will normally be an asphalt surface unless otherwise approved by the County.

J2.3 Width

1. Right-of-way – minimum 5m.

2. Surface width of 2.5m minimum for local trails.

3. Surface width of 3.0m minimum for regional trails.

J2.4 Root Barriers

To protect pathway sections in the vicinity of aggressive rooting species, install root barriers along sections of trails that run through wooded areas that have species of the Poplar family (except Aspen) or Willow family located within a 5m setback of the trail. Refer to detailed drawings section. Root barriers will not necessarily run continuously through the wooded areas. They will only be installed where there are encroaching species.

J2.5 Safety Clearance / Setback Requirements

1. Provide 1.0m clear of all obstacles on both sides.

2. Provide 3.0m clear of all obstacles overhead.

3. Normally trails are to be located a minimum of 5.0m from the edge of the road.

J2.6 Safety Railings

1. Safety railings shall be installed when a trail is within 2.0m of the top of a bank with a 2:1 slope or steeper, and the slope is greater than or equal to 1.0m in depth.

2. Minimum railing height and design to be as per drawings detailed or to be an equivalent as approved by the County.

3. Chain-link fence is only acceptable when the metal is attached to, but not protruding above the top rail.

4. Wooden fences are not permitted.

J2.7 Trail Junctions

1. Where possible, ensure trails join at right angles.

2. Provide widening of trails with radius of 4.0m where trails join other trails.

J2.8 Trail Entrances / Wheel Chair Ramps

1. Minimum of three (3) bollards with the center bollard being removable are required at the entrance of each trail. The bollards will be placed at no less than 1.0m apart to accommodate wheel chairs and strollers. A square tubing fence will be attached to the bollards and run a minimum of 10m parallel to private property. Refer to the drawings.

2. Extend trail to road edge in all cases.

3. Ensure trail joins road at right angles.

4. Provide an asphalt wheel chair ramp complete with depressed concrete curb, as required, where the entrance to a trail is on a road or other entry point. Refer to the drawings.

J2.9 Sightlines

Where possible, ensure no obstructions such as trees, shrubs, utility boxes, fences, etc., restrict the visibility within 5.0m of a junction with other trails and roads.

J2.10 Design Criteria for Bicycles

1. Maximum grades

GRADE	ACTION
Over 8 percent	Re-route or provide stairs
5 – 8 percent	Not longer than 50m*
3 – 5 percent	Not longer than 200m
Under 3 percent	Acceptable

*keep bicycles and pedestrians separate and avoid curves and constrictions.

2. Design Speed

TERRAIN	SPEED
Flat	Not to exceed 35 km/hr
Downgrades	Not to exceed 50 km/hr

3. Super elevation – on curves minimum 2 percent; maximum 5 percent.

4. Stopping Sight Distances – as described below

Minimum SSD – $V^2/[255\ (f+g)] + 0.695v$

Where SSD = Stopping Sight Distance
v = bicycle design speed (typically 30 km/hr)
f = coefficient of friction = 0.25
g = grade m/m (rise of descent/run)

The following table may also be used to obtain appropriate stopping sight distances

Gradient	Level	Ascending		Descending	
	0%	2.5%	5%	2.5%	5%
SSD	35 m	33.5 m	32.5 m	36.5 m	38 m

Note – a stopping sight distance of 35m is considered a standard guideline

5. Minimum Design Curve Radii – minimum design curve radii is as follows

   Minimum $r = v^2/[127 (e+f)]$

   Where r = minimum radius
   f = coefficient of friction = 0.25
   e = super elevation
   v = bicycle design speed (typically 30 km/hr

   The following table may also be used to obtain the appropriate minimum radius for gravel trails with 2% banking

Speed	10 km/hr	15 km/hr	20 km/hr
Radius	2 m	5 m	9.5 m

Note – a minimum design curve radii of 5m is considered a standard guideline.

J2.11 Stairs

1. Where possible, avoid use within a trail network.
2. Stairway design is subject to the site but some general principles can be assigned.
3. Preference is given to metal handrails due to lower maintenance costs and increased longevity.
4. Consideration should be given to one set of stairs in each subdivision to be wheel chair accessible.
5. All wood shall be pressure treated.
6. Please refer to the Alberta Safety Code for maximum amount of treads allowed in a run.
7. Riser height – minimum of 6.5” and a of maximum 7.5”
8. Width of stairs – minimum - 2m wide.
9. Tread width - 11”

10. Tread will be two boards approximately 6” wide x 2” thick to allow for drainage. Gap between tread board on stairs and deck boards on landings must be no more than 1/16th of an inch.

11. Engineer will be required to make a recommendation on tread surface treatment to prevent slipping hazards.

12. Stringers are to be a minimum of 2’ x 12” and a maximum spacing of 36”

13. Riser height and tread depth shall be uniform within each flight of stairs, including any foundation structure used as one or more treads of the stairs. Variations in riser height or tread depth shall not be over 1/4-inch (0.6 cm) in any stairway system.

14. Stair-rails and the top rails of stair-rail systems shall be capable of withstanding, without failure, a force of at least 200 lbs (90.9 kg) applied within 2 inches (5 cm) of the top edge, in any downward or outward direction, at any point along the top edge.

15. The ends of stair-rail systems and handrails shall be constructed so as not to constitute a projection hazard.

16. Hand rail must be circular metal and generally continuous and approximately 30” to 34” high.

17. Metal rail must be painted with appropriate metal paint .The color should be generally non-intrusive to the surrounding area.

18. Interconnect railing and handrail members by butt welding or welding with internal connectors, at fabricator's option, unless otherwise indicated.

19. At tee and cross intersections, notch ends of intersecting members to fit contour of pipe to which end is joined and weld all around.

20. Form simple and compound curves by bending pipe in jigs to produce uniform curvature for each repetitive configuration required. The cylindrical cross section of pipe must be maintained throughout entire bend without buckling, twisting, cracking, or otherwise deforming exposed surfaces of pipe.

21. Close exposed ends of pipe by welding 3/16 inch thick steel plate in place or by use of prefabricated fittings, except where clearance of end of pipe and adjoining wall surface is 1/4 inch or less.

22. Sandblast exposed surfaces smooth with pits, mill marks, nicks, and scratches filled and ground smooth so that no defects are visible from a distance of 6' after painting.

23. Conceal welds where possible. Where exposed, grind welds to small radius with uniform size cove. Welds shall be undetectable after painting.

24. Use only flat head countersunk bolts in exposed locations.

25. Install bicycle ramp along one side where stairs are unavoidable.

26. Any portion of stairs within 3m of a water body shall be installed on screw piles. Screw piles shall be a minimum size of 3" diameter pipe, 14" diameter helix and installed to a minimum depth of 6'.

27. County to approve all proposed stair locations.

28. Refer to standard drawings.

J2.12 Lighting

1. Provide on local and regional trails as required by the County.

J2.13 Pedestrian Bridges and Overpasses

1. Railing height as per Alberta Building Code.

2. Minimum deck width to be 3.0m between railings.

3. Submit concept drawings to the County, ensuring all drawings are stamped by a professional engineer and approved by the County.

J2.14 Vehicular Bridges and Overpasses

1. In general, ensure sidewalks for pedestrians and widened shoulder lanes for cyclists are provided along one side of the structure.

2. Where a bridge is part of the trail system, ensure that combined trail and sidewalks are provided along one side of the structure.

3. Railing height as per Alberta Building Code.

4. Minimum bridge or overpass width is to be 3.0m.

5. Submit concept drawings to the County, ensuring all drawings are stamped by a professional engineer and approved by the County.

J2.15 Pedestrian Underpasses

1. Minimum height of 3.0m and a minimum width of 3.0m.

2. Ensure drainage is kept in concrete swale along one side.

3. Ensure adequate lighting and if required must be approved by the County.

4. Maximum length of 50m. Provide break in underpass within median of divided roadways.

J2.16 Park and Playground Equipment

1. Park and Playground spaces should complement the area and provide benefit to the overall community.
2. All park and playground components, equipment and surfacing shall conform to *CSA Z614*, latest revision thereof.
3. All park and playground installation shall conform to *CSA Z614*, latest revision thereof.
4. After installation, prior to any use of equipment, and inspection completed by a Canadian Certified Playground Inspector shall be supplied to the County.

J2.17 Signage

1. Provide standard identification signs with trail name at trail entrances and trail junctions.

2. Provide standard hazard warning signs where appropriate.

J3. STANDARD SPECIFICATIONS

J3.1 Description / Quality Assurance

This section specifies the construction of functional and cost effective trails. The Contractor must have experience at performing the type and scale of work required by the County and be willing to provide proof of this experience.

J3.2 Inspections

1. The Contractor shall have an approved set of drawings and specifications available prior to calling the County for an inspection.

2. The Contractor shall provide documentation from a qualified professional of the trail alignment and sub-base and surface treatment (i.e. compaction test results and depth of gravel or asphalt).

J3.3 Materials

1. Gravel Surface Treatment Minimum of 10mm crushed gravel meeting at least 4:20 specifications.

2. Asphalt Surface Treatment S2 200-300A.

3. Bollards
   a) Refer to detailed drawings.
   b) Schedule 20 steel pipe minimum 140 mm outside diameter
   c) 1m height with 0.75m in ground in concrete
   d) Steel cap welded on
   e) Upper 200 mm painted red and lower 800 mm painted white
   f) All paint is to be powder-coated polyester
   g) The bollard will be removable where service vehicle access is required

4. Root Barriers
   a) 40 mm high density polyethylene
   b) Refer to detailed drawings.

J3.4 Installation

1. Refer to detailed drawings.

2. Compact surface treatment to 98% S.P.D. – asphalt surface shall be 75 mm of S2 200-300A – roll/tamp asphalt edges.

3. Compact sub-base and sub-grade to 98% S.P.D. The sub-base shall be 100 mm thick of 25 mm crushed gravel.

4. 2% cross-fall except where super-elevation required on a curve.

5. No trapped low areas on trail surface.

6. Ensure trails are not used as drainage swales. Use swales and culverts to ensure there is positive drainage away from the trail surface. Refer to detailed drawings.

7. Place good quality topsoil (raked and rolled) and sod, unless otherwise specified, on turf areas damaged by construction.

8. Ensure that the sod surface is flush with the trail edge.

J3.5 Maintenance

Developers will maintain trails and amenities from the time of installation until issuance of the Construction Completion Certificate by the County.