

Manual of Aesthetic Design Practice



**BRITISH
COLUMBIA**

Ministry of Transportation

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Roadside Facilities

Roadside Facilities

Introduction

Highway roadside facilities addressed in this section include the following:

- safety rest areas
- tourist information centres
- picnic areas
- scenic lookouts
- pullouts
- cultural / historic sites
- weigh scales
- toll booths

The development of Safety Rest Areas have been a part of highway design in North America since the 1920's with a major emphasis on implementation related to the US Interstate Highway system from the 1960's to date.

Rest areas perform a valuable function related to highway safety. By offering a respite from the monotony and fatigue of long distance driving, rest areas encourage motorists to stop briefly, and to return to the road as safer drivers.

Well designed rest areas provide a good image of the Ministry, and of the province of B.C.

Where new highways are being developed in B.C. there is a great opportunity for the creation of rest areas. Along existing highway routes, there is also the opportunity to redevelop and expand existing rest areas.

The function of safety rest areas within this highway system might include: providing a rest from driving, emergency stops, travel information, interpretive information, restrooms, telephones, picnic facilities, recreational areas, and access to private concessions, such as service stations or lodging.

There is an opportunity with the new emphasis on transportation in the province, to bring B.C. rest areas up to state of the art standards.

Recommended Practices

The following pages outline recommended practices concerning the aesthetic design of roadside facilities for highways in B.C., as summarized below:

1.0 A Provincial Roadside Facility Program is in place including a Provincial Master Development Plan, and Regional/District Implementation Plan for Roadside Facilities.

2.0 Roadside Facilities will be identified as one of the following: Safety Rest Area - Class A, B, or C, or Pullout.

3.0 Select the spacing and appearance standards for roadside facilities in accordance with the Aesthetic Classification of the highway.

4.0 Prepare a Roadside Facility Spacing Plan which identifies the approximate distribution of roadside facilities along each highway route.

5.0 Complete a site selection process which incorporates roadside facility programming, conceptual plans of alternate sites, and objective means of site selection.

6.0 Design and develop roadside facilities with attention to detail appropriate to the close inspection which the facility will receive.

7.0 Regional Managers are encouraged to appoint the appropriate specialist disciplines to the planning and design of roadside facilities.

8.0 Summary of Roadside Facility Planning and Design Method.

1.0 Provincial Roadside Facility Program

A Provincial Roadside Facility Program is in place, including a Provincial Master Development Plan, and Regional/District Implementation Plan for Roadside Facilities.

.1 The Provincial Roadside Facility Master Development Plan identifies the following:

- Current inventory of facilities.
- A spacing plan for roadside facilities, including recommendations for additions, deletions, and upgrading of safety rest areas.
- Design guidelines and standards for features common to roadside facilities.

.2 Regional and District Implementation Programs include:

- A review of potential roadside facility sites.
- A site selection process, which will include preliminary conceptual design for alternate sites, and a documentation of rationale for selection of preferred sites.
- Capital cost estimates for construction of roadside facilities, and recommended priorities and time lines for financing and construction.

.3 On-going coordination of provincial and local plans will be to create a comprehensive and evolving Provincial Roadside Facility Program.

.4 Planning for location and site selection of roadside facilities for new highways will be performed concurrently with alignment design.

2.0 Definitions of Roadside Facility Types

Identify proposed roadside facilities as one of Safety Rest Area - Class A, B, or C, or Pullout as defined below.

.1 Safety Rest Areas

Safety Rest Areas in B.C. will be one of three classes as outlined below:

Safety Rest Area - Class A

Class A Safety Rest Areas will be major full service facilities on major tourist routes in the province. Features will include:

- permanent building
- flush toilet facilities and wash basins
- minimum 2 men's, 3 women's units
- various other rest area amenities

Safety Rest Area - Class B

Class B Safety Rest Areas will be smaller facilities, including:

- small toilet building(s)
- one or two units minimum for men/women.
- toilets to be water or chemical flush type.
- other amenities as site allows

Safety Rest Area - Class C

Class C Safety Rest Areas will have a minimum level of facilities in remote, low use areas only, including:

- Pit toilets, or chemical vault privies
- no potable water supply
- litter receptacles
- minimum of other amenities

.2 Pullouts

Pullouts are widenings of the road shoulder to allow short term stops for up to three vehicles per pullout. Pullouts may often be at minor views or points of interest. Facilities at pullouts may include:

- information or interpretive signage
- litter receptacles
- safety handrails
- pullouts do not have toilet facilities

1.1 Safety Rest Area - Class A

- Class A Safety Rest areas are major facilities to provide safe refuge from the monotony of driving, including services such as:
 - deceleration/acceleration lanes
 - separate car and truck parking areas
 - flush toilets and service building, 2 men's and 3 women's units minimum
 - picnic area
 - walkway system
 - pet exercise area
 - lighting, telephone and supporting utilities
 - rest areas may also include functions of view-point/information areas



Figure I-2
Class A Safety Rest Area.

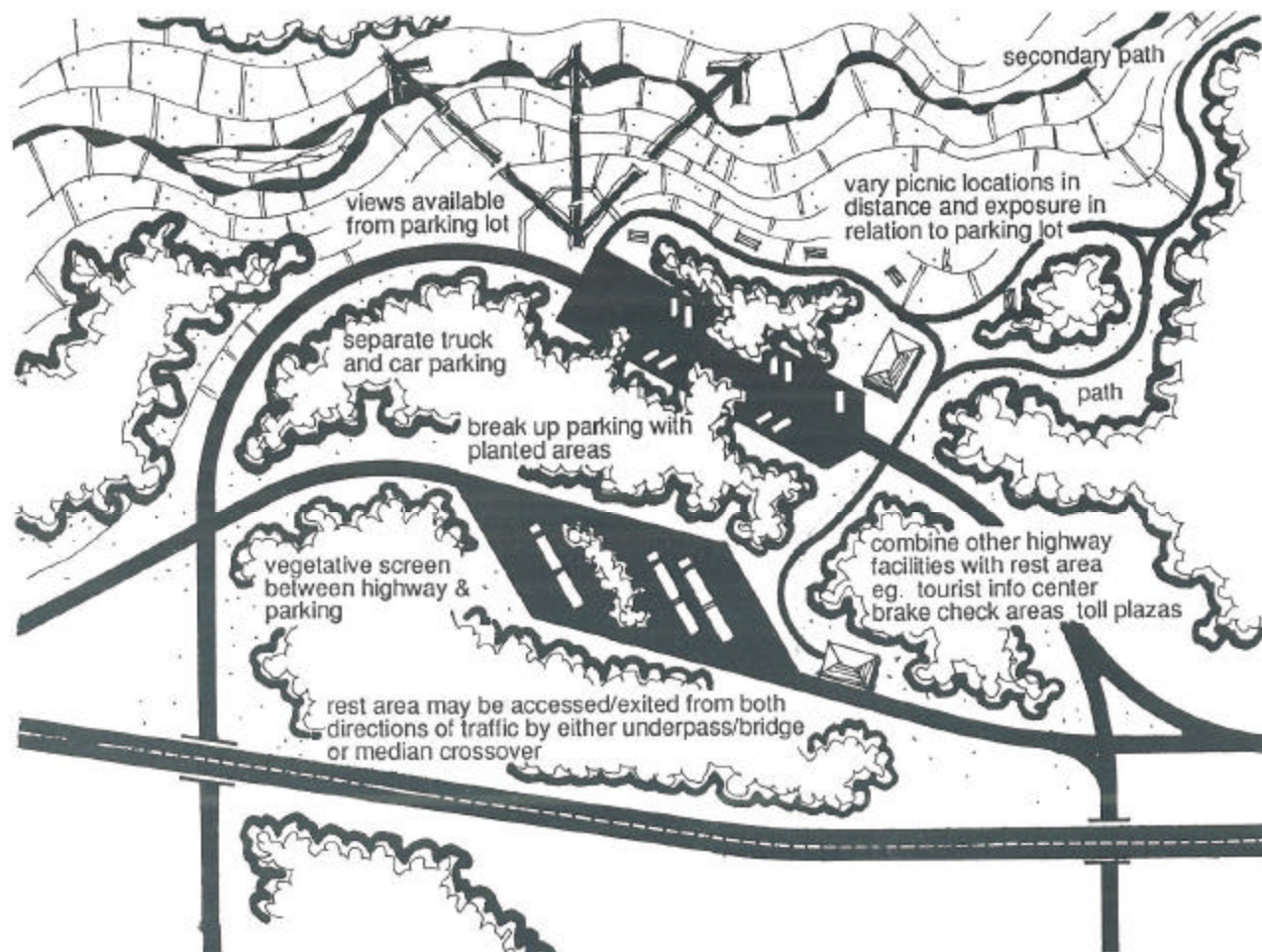


Figure I-1
Typical Class A Safety Rest Area Schematic Plan. Note: Each Rest Area plan must respond to the local site.

2 Safety Rest Area - Class B

- Class B Safety Rest Areas are intermediate size facilities to provide safe access to significant viewpoints, interpretive or tourist information, including services such as:

- deceleration/acceleration lanes
- combined car/oversize vehicle parking
- small, usually standard washroom buildings containing water or chemical flush toilets, minimum 1 unit each for men/women
- walkway system
- viewpoint area and associated signage, and/or interpretive display, and/or tourist information signage
- small picnic area, only if potable water and wash basins are available
- other optional facilities such as viewing decks, pet exercise areas



Figure I-4
Class B Safety Rest Area.

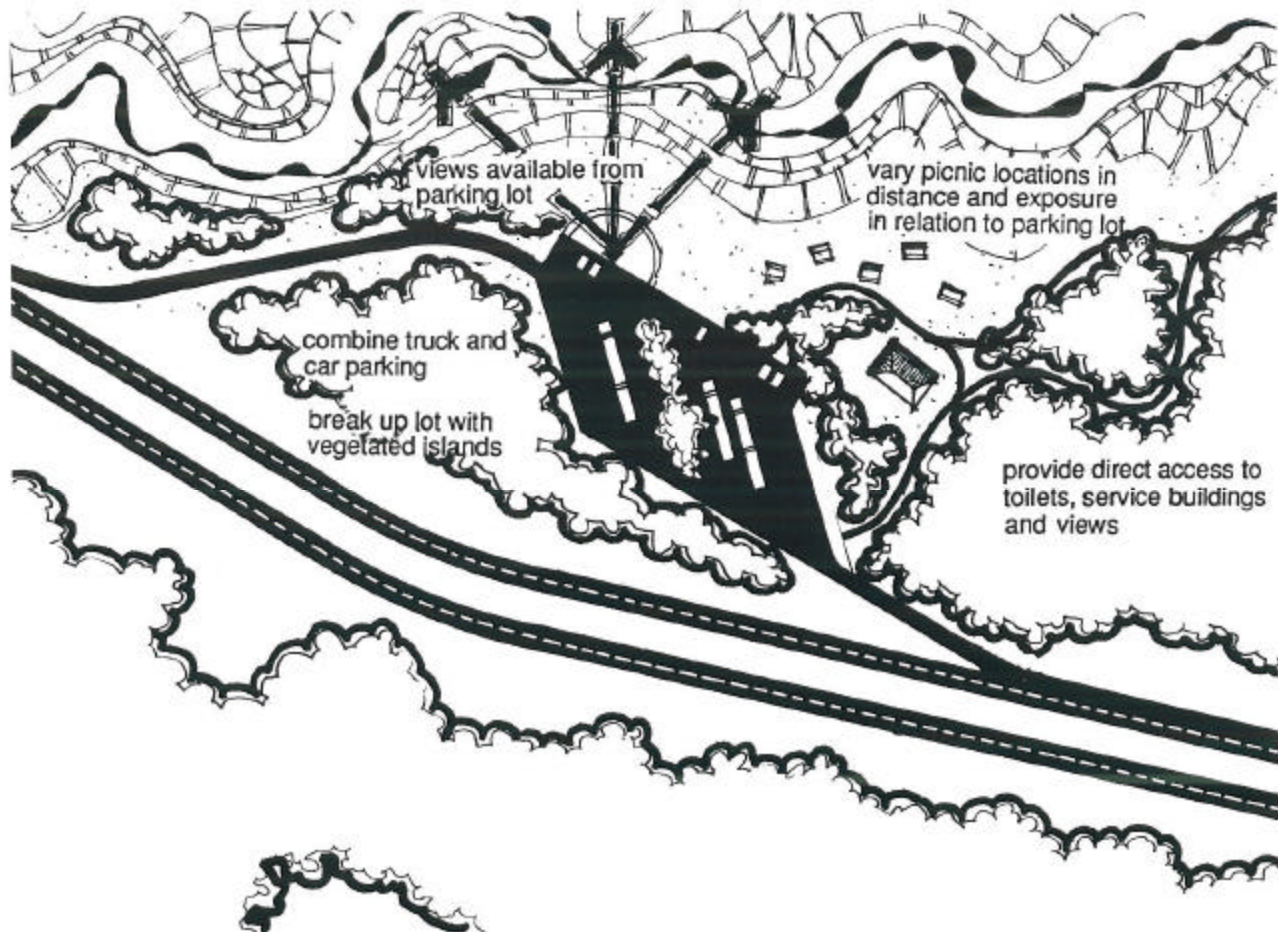


Figure I-3
Typical Class B Safety Rest Area Schematic Plan. Note: Each Rest Area plan must respond to the local site.

3 Safety Rest Area - Class C

- Class C Safety Rest Areas will provide smaller scale facilities in low use areas, but with various site amenities. Services will include:
 - minimum 1 each of men's and women's toilet, pit privy or chemical vault (non-flush) type units in standardized enclosures
 - viewpoints and related signage
 - tourist information signage
 - litter receptacles
 - small scale pedestrian walkway system



Figure I-6
Class C Safety Rest Area

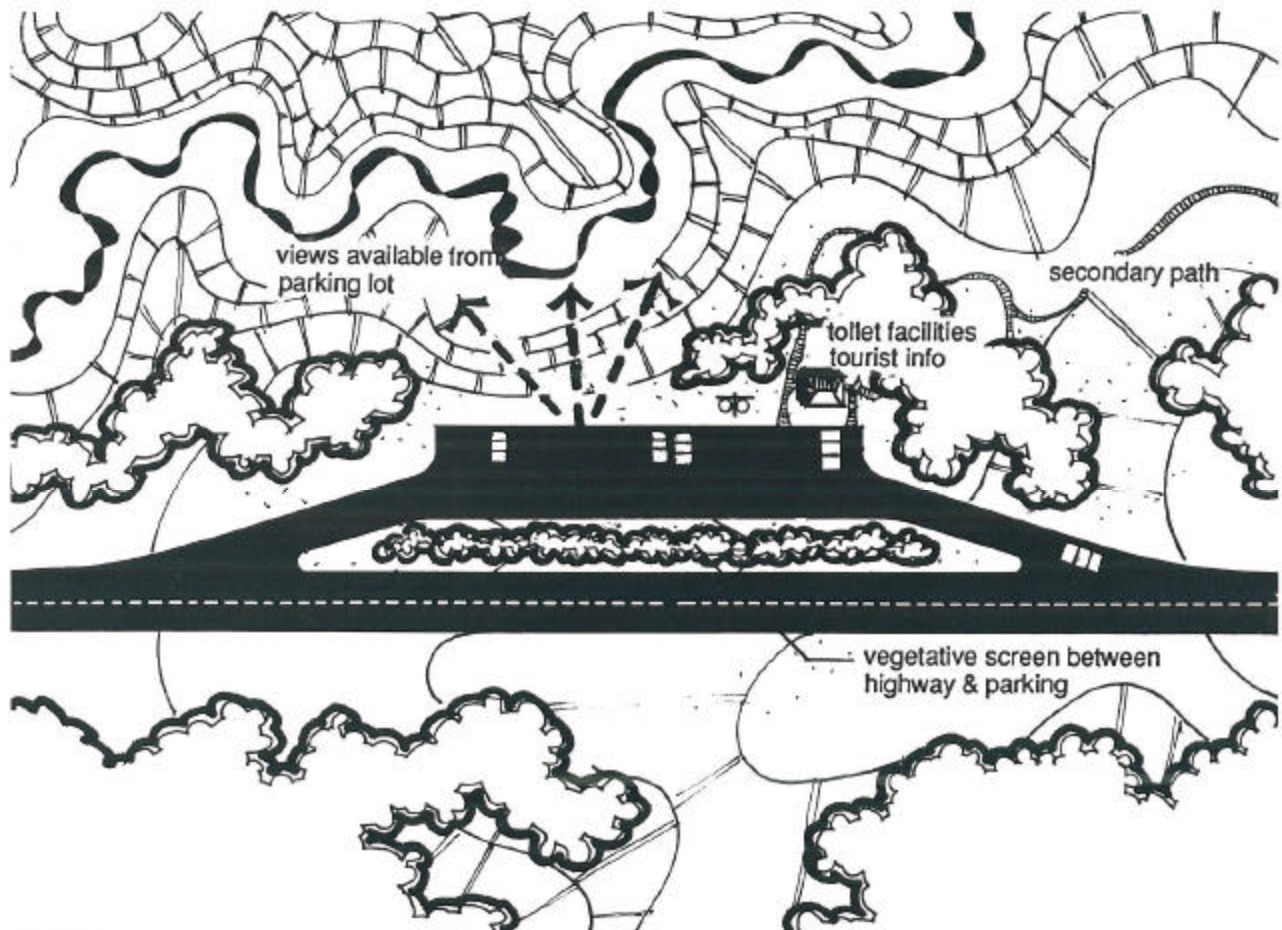


Figure I-5
Typical Class C Safety Rest Area Schematic Plan. Note: Each Rest Area plan must respond to the local site.

.4 Pullouts

- Pullouts are small facilities to provide an opportunity to enjoy views, deposit litter to receptacles, or allow slow-moving or recreational traffic to pull off the travelled way.
 - pullouts are generally intended to alleviate the hazard of vehicles stopping to access a minor view or recreational feature for which a full scale viewpoint/information area is not warranted.
 - limited services offered at pullout may include:
 - direct pullout of vehicles onto the road shoulder
 - may or may not include pedestrian areas and walkway systems, if included, these should be effectively separated from vehicular area.
 - taper the entrance/exit of the pullout.



Figure I-8
Typical Pullout.

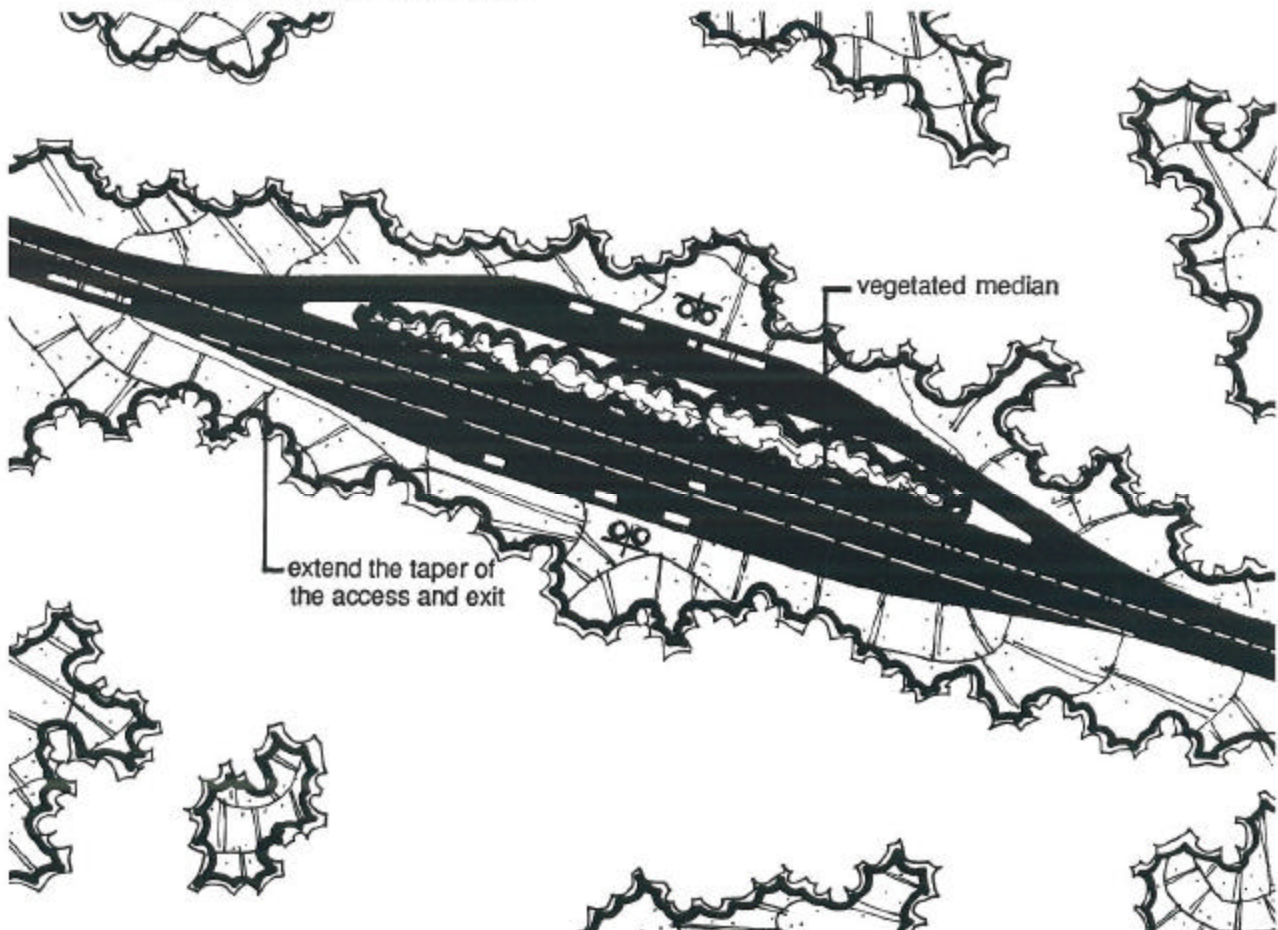


Figure I-7
Typical Pullout Schematic Plan. Note: Each pullout plan must respond to the local site.

3.0 Aesthetic Classification System and Roadside Facilities

Select spacing and appearance standards for roadside facilities in accordance with the Aesthetic Classification of the highway.

.1 Section B of this report introduces an Aesthetic Classification System which provides for all roads in B.C. to be categorized as one of:

- Baseline Highway
- Tourway
- Parkway

Table I-1 Summarizes the recommended frequency of various roadside facilities for the above classes of highway. Refer to Part 4 of this Section for more detailed standards.

Typical Frequency of Roadside Facilities			
	Parkway	Tourway	Baseline Highway
Safety Rest Area, Class A	1 per hour	1 per hour	1 per hour if no other stops with public washrooms exist.
Safety Rest Area, Class B or C	1 - 3 per hour	1 - 3 per hour	if, and where, significant views or points of interest exist.
Pullout	6 per hour* or as conditions warrant	3 - 6 per hour* or as conditions warrant	where conditions warrant
Total opportunities to stop per hour	8 - 10** on two-lane highways, 2 - 5 on freeways	5 - 10** on two-lane highways, 2 - 5 on freeways	minimum 1 per hour

• * regularly spaced pullouts may not be applicable to high speed 4-lane or freeway situations. However, provision for safe stopping by vehicles should be provided where attractive views exist along the freeway, so that motorists making unsanctioned stops do not present a hazard.

• ** quantity of stop opportunities may be reduced if other public washroom facilities or stop opportunities exist along the route e.g. commercial service station, restaurants, public park. Areas which are exclusive to the general public do not qualify as stop opportunities e.g. private resorts, commercial tourist attractions.

Table I-1
Typical Frequency of Roadside Facilities

4.0 Roadside Facility Spacing Plan

Prepare a roadside facility spacing plan which identifies the approximate distribution of roadside facilities along each highway route.

.1 Roadside facilities will be considered for all limited access highway developments outside municipal boundaries (villages, towns, cities) in the province.

.2 Use Table I-1 as a guide to the approximate frequency of various types of roadside facility in different highway aesthetic classifications.

- Safety Rest Areas, Class A should generally occur within an interval of 1 hour driving time (approximately 80 km).
 - This spacing will be affected by the availability of other rest areas, existing community or commercial facilities, available sites, and other uses to be combined with the rest area.
 - The maximum spacing between opportunities for motorists to access a rest facility (private or public) should not exceed 100 km.
- Safety Rest Areas, Class B or C should generally be located where the setting or opportunity dictates, with an objective of between one and three such facilities per hour along Parkways and Tourways.
- Pullouts should be located where conditions warrant, with an objective of six pullouts per hour on Parkways, and three to six per hour on Tourways.
 - pullouts may not be appropriate in high speed four lane highways, but in these cases a practical means of providing safe stopping locations at minor viewpoints or recreation attractions must be given, so that the traffic which stops does not create a hazard. Paved shoulders may meet this requirement. Where paved shoulders are not provided, then some form of pullout would be necessary at key points.

.3 Spacing and frequency of roadside facilities will follow the above guidelines, as augmented by the considerations below:

- **Utilities**
 - Are utility services available or feasible for the roadside facility? Water supply? Wastewater disposal? Electrical?
- **Traffic Type**
 - What mix of traffic type is on the highway? Commercial / Recreational / Commuter ?
- **Spacing & Volume**
 - What frequency, mix of types and spacing of roadside facilities will be required?
 - How does this relate to existing roadside facilities along the route, including those outside of the province?
 - What services might be provided by existing communities or commercial developments readily accessible to the motorist?
- **Tourism**
 - What demands or opportunities are there for tourist information along the route?
 - Can roadside tourism information facilities be located to provide the best tourism advantage eg. just prior to attractions or communities?
- **Maintenance**
 - Can a high level of maintenance of the roadside facility be provided?
 - Is the site reasonably accessible to maintenance contractors or personnel, to provide regular and economical maintenance?
- **Quality of Service**
 - What quality of service may be provided at the roadside facility? Flush toilets?
 - Can a rest area be combined with a scenic viewpoint, or with a high amenity site eg. waterfront?
 - Can a rest area also accommodate other facilities, eg. weigh scales

5.0 Roadside Facility Site Selection Process

Complete a site selection process which incorporates roadside facility programming, conceptual plans of alternate sites, and objective means of site selection.

.1 Write an outline facility program for each highway facility.

- Table I-2 provides a guideline for such a program for safety rest areas and pullouts.
- Adapt the guidelines given in Table I-2 to reflect the needs and priorities of the route and the region.

- The facility program should list the objectives, components, functional requirements and capacity of the required facilities.
- Review existing and proposed private sector or other facilities along the route to ensure that highways facilities will not duplicate those already provided.

	Safety Rest Area Class A	Safety Rest Area Class B or C	Pullout
Separation from highway lanes	landscaped island, c/w solid screen of vegetation and/or earthworks	landscaped island, c/w semi-transparent screen of vegetation and/or earthworks	optional separation island
Form of parking	two areas, one each for truck/oversize and passenger car	one area, parallel oversize parking, angle car parking	short term parallel parking only
Capacity of parking	as required, maximum 60 cars, 20 oversize	as required, maximum 30 cars, 10 oversize	3 vehicles, parallel parking
Finish of parking	paved, curb, underground storm drainage	paved, with one of curb, wheel stop or posts to separate vehicle and pedestrian areas, limited underground storm drainage	paved, surface drainage, effective separation of vehicular and pedestrian areas if pedestrian areas are included
Washrooms	flush toilets, washbasins	water or chemical flush toilets to health inspector's approval	N/A
Pedestrian Circulation	primary, secondary and tertiary walk system	primary and secondary walk system minimum	in accordance with need and opportunity
Picnic area	mandatory	optional, only in areas with wash basins	N/A
Food concessions	optional - only if permanently staffed by non-highways personnel, by written contract	N/A	N/A
(cont'd on next page)			

Table I-2
Guideline Facility Program

	Safety Class A	Rest Area	Safety Class B or C	Pullout
Interpretive facilities	in permanent building(s), and permanent outdoor signage to MTH approval		permanent outdoor signage to MTH approval	permanent outdoor signage to MTH approval if applicable
Tourist information	in permanent buildings, and permanent outdoor signage to MTH approval (no outlets for pamphlet distribution should be out of doors)		permanent outdoor signage to MTH approval	permanent outdoor signage to MTH approval if applicable
Building design	custom architectural design, exterior to respond to site and regional influences, floor plan similar to MTH standard design		standard MTH design	N/A
Telephone	accessible 24 hours a day, inside or outside building, underground distribution		free standing kiosk if telephone utility available on highway, underground distribution	N/A
Electrical supply and lighting	light parking areas and building area, low height decorative fixtures, underground distribution		light privy area and interior if power available on the highway, fixtures on privy building, underground distribution	N/A
Water supply	potable water to buildings, drinking fountain, public tap, and irrigation system - supply by well or alternate to health inspector's approval		potable water supply if available	N/A
Wastewater disposal	septic field or alternate to health inspector's approval		septic field or pump-out privies for Class B, pit privies for Class C, all to health inspector's approval	N/A
Litter control	provide litter containers distributed along pathways, with central collection depot in screened location separate from public areas		provide litter containers adjacent to parking areas and picnic area, accessible for garbage collection	provide litter container and program for regular litter pickup
Pet exercise area	separate from food/picnic area and building		N/A	N/A
Other features to consider if demand warrants	sani-dump, cultural/historical exhibits, benches/seating areas, flower gardens/shrub display, telescopes, playground		cultural/historical markers, viewing decks	cultural/historical markers
Other facilities which may be combined	viewpoint, information areas, weigh scales, toll plaza (nearby), access to secondary road		N/A	N/A

Table I-2 (cont'd)

.2 Collect base data for each route, at a scale and detail adequate to allow identification of potential roadside facility sites (e.g. 1:5000). Data collected should include:

- topography and physical features
 - vegetation pattern
 - water features and drainage patterns
 - viewpoints accessible from the highway
 - historical and cultural attractions along the route
 - interpretive opportunities along the route
 - recreation opportunities along the route
 - soil and geotechnical patterns, hazard zones
 - cadastral information and general ownership status and land use
 - Agricultural Land Reserve boundaries
 - utility services available along the route
- To limit data gathering expense for Baseline Aesthetic Class highways, it may be feasible to limit data collection to study areas identified by the roadside facility spacing plan created earlier.

.3 Select candidate sites.

- The emphasis in roadside facility planning and location should be on selecting the highest quality site possible.
- Primary considerations in the site selection process should be:
 - site amenity, including views, attractive vegetation, and water features or other recreational amenities if available
 - available utilities if required eg. availability of water, and appropriate methods of waste-water disposal
 - reasonable adherence to the intent of spacing plans
 - adequate size and terrain to accommodate programmed uses, and for reasonable access and geometrics. In high speed four lane developments, space from the nearest interchange to the ramps for a roadside facility should be 1.6 km minimum, unless the roadside facility is serviced by the interchange
 - limited impact on environmental quality, or environmentally sensitive areas
 - freedom from unsurmountable physical constraints of soil stability / geotechnical conditions, groundwater, geological or climatic hazards
 - reasonable land acquisition costs and owner co-operation. Compatibility and good separation from adjacent uses
- Take advantage of unique site opportunities to create memorable facilities, eg.
 - changes in vegetation communities
 - interesting landforms or topography
 - water features
 - historical or cultural features
 - nature interpretation opportunities

.4 Field visit candidate sites.

- It is imperative that designers/ planners visit candidate sites to assess attributes and opportunities.
- It may be possible to limit the number of candidate sites to a reasonable quantity for further investigation, based on the field visit.

.5 Conduct thorough site analysis of each remaining candidate site indicating physical features and unique aesthetic qualities including:

- slopes
- physical features / topography
- climatic and microclimate considerations
- soil and geotechnical considerations
- drainage patterns
- utilities / services available
- obtain base data at 1:1000 scale to allow assessment of site features indicating:
 - ° legal survey and existing utility information
 - ° existing contours at an interval of 1m or smaller
 - ° survey of existing vegetation

.6 Produce functional relationship diagram, access alignment study, and design concept for each candidate site.

- Functional relationship diagrams (bubble or schematic plans) allow the planner to envision how the site might be developed in the coarsest sense.
- Several different bubble diagrams might be attempted for each site, to assess the capability of the site.
- Record any special problems or opportunities which become evident as a result of the functional relationship diagrams.
- Select the most promising relationship diagram, and proceed with road alignment geometry studies.
 - determine whether reasonable horizontal and vertical curves can access the site.
 - keep in mind that roadside facilities are a slow speed environment, and that highway standard geometrics need not rigidly apply.
- Proceed to add the proposed siting of buildings, parking, pedestrian walk systems, and picnic areas or other facilities as identified by the program. Refine these into an overall design concept for the site.

.7 Determine each candidate site's availability of utility services, including:

- water
- wastewater disposal
- electrical
- telephone

.8 Compare candidate sites by objective means, including:

- relative capital cost
- relative maintenance cost
- relative range of facilities offered
- relative attractiveness to users
- relative environmental impact
- relative contribution to the highway aesthetic experience
- compatibility with staging plan
- perceived cost benefit

.9 Select preferred sites.

- if no sites appear to be large enough to accommodate all required elements, consider an additional location, i.e. increase frequency of rest areas.
- sites selected may include rest areas, viewpoints, information areas, and pullouts as identified in the spacing plan.

.10 Document the base data generated, alternatives considered, and rationale for the selection made.

- Pass information on to detail design team if different than the site selection team.

6.0 Roadside Facility Design Process

Design and develop roadside facilities with attention to detail appropriate to the close inspection which the facility will receive.

- Roadside facility design must pay attention to an additional level of detail not appropriate to highway design.
 - roadside facilities are unique in highway planning as they are subject to viewing at either low traffic speed or by pedestrians
 - preservation of existing site character and response to aesthetic opportunities is imperative
 - the scale of the final facility relates to the pedestrian and is thereby more intimate than highway scale. The design process must reflect the increased level of detailed decision-making required.
- The site planning and design process to address this level of detail can be summarized as follows:

.1 Complete detail survey and site analysis:

- Scale 1:250
- Contour interval 0.5m geodetic
- Survey should locate elements marked in the field by the designer, eg.:
 - tree groupings or individual trees
 - rock outcrops
 - water features
 - historical features
 - existing trails

- Designer should complete detailed on-site analysis of:
 - views and vistas
 - site character
 - health and type of existing vegetation
 - existing slopes, topography and drainage
 - potential trail routings
 - existing microclimate areas
 - existing wildlife
 - other site features
- Specialized studies should be completed on:
 - soil suitability, for
 - ° bearing capacity, use as fill
 - ° landscape topsoil
 - ° sewage disposal suitability
 - water supply, for
 - ° groundwater assessments or test wells
 - ° discussions with adjacent municipalities or regional districts re water supply
 - property acquisition issues, eg.
 - ° legal boundaries
 - ° easements and other encumbrances
 - ° appraised value
 - ° owner attitude towards disposition
 - environmental issues, eg.
 - ° wildlife habitat
 - ° sensitive environmental areas
- Document these detailed site analyses for use by the design and construction team.

.2 Refine the design concept created in the site selection process in response to the new information generated.

- Reassess the location of the major site components.
- Review functional relationships among site components:
 - for purposes of clarity, functional relationships can be classified as:
 - ° compatible - eg. picnic areas and scenic rest areas.
 - ° incompatible - eg. picnic areas and trailer dumping facilities.
 - mitigation techniques may be utilized to ease conflicts between incompatible uses including:
 - ° buffering - eg. earthworks for noise abatement
 - ° screening - eg. plantings between picnic areas & unsightly views
 - ° physical separation - eg. provide space between incompatible uses.
 - consider techniques to enhance relationships between compatible uses:
 - ° retain adjacent relationships between related uses but offset locations for increased aesthetic experience - eg. washrooms sited close to parking but offset enough to allow enjoyment of pleasant surroundings, and views available between parking areas and washrooms, with seating provided to enjoy views while waiting .
- Identify the conceptual relationship of the building to the site, i.e.:
 - orientation
 - access point(s)
 - building form - single or multi-level
 - site features to incorporate with building design eg. rock outcrops, slopes, existing trees, views or backdrops.



Figure I-9
Include provision for access and enjoyment of rest areas by physically challenged individuals. Note the extended table top and slab at this table.



Figure I-10
Good relationship between parking and picnic area - convenient, but with some separation.



Figure I-11
A custom designed building for a rest area.

- Refine roadway access/egress and alignments:
 - Rest Areas and Viewpoint/Information areas on limited access highways will be designed with adequate merge lanes, acceleration and deceleration lanes so as not to obstruct traffic on the mainline highway, and with sufficient advance signage to allow for reaction time by the driver for access.
 - identify relationship of access road to site, use opportunities to use existing or created landform and vegetation to slow down traffic, create a gateway feeling, or create a sense of mystery.
- Refine parking area size, shape and general configuration
 - amount of parking sets limitations on facility use - avoid overabundant parking, as this may lead to overuse of the site.
 - include provisions in parking lot for the physically challenged, with curb drops to allow access from parking area to pedestrian walkway system.



Figure I-12
Create curved islands and curvilinear entrance roads.



Figure I-13
Avoid excessively large parking areas for car parking.

- Identify location of any special features or facilities eg.

- lookout points
- interpretive signage
- pet exercise area



Figure I-14
Provide interpretive display and photo opportunity.



Figure I-15
Marsh outlook. Note deck to control access to marsh.



Figure I-16
A scenic overlook without adequate protection for pedestrians.



Figure I-17
A scenic overlook with reasonable pedestrian protection. Note innovative combination of post barriers and signage



Figure I-18
Interpretive signage grouped at the end of a short secondary path.

- Identify a hierarchical pedestrian system:
 - primary paths should link parking to building and major attraction.
 - secondary paths should service picnic area, minor facilities and provide strolling opportunities
 - tertiary paths should be rustic trails for more extended walking, through wood/meadows or other un-manicured areas.
- primary and secondary paths should be accessible to physically challenged to National Building Code standards.



Figure I-19
Primary path to building and site features.



Figure I-20
Secondary path located away from major circulation area.

.3 Perform field review of the design concept by the designer:

- Walk through the design
- Lay out the major components.
- Mark notations/refinements on a design plan right in the field - this will provide a reminder in the office.
- Incorporate the refinements into the final design.



Figure I-21
Tertiary path. Note closeness to nature in this path.



Figure I-22
Tertiary path. Emphasis in tertiary path design should be on exposing the natural attributes of the site.

.4 Complete preliminary detail design of road/parking area alignment and grades:

- Meet the deceleration/acceleration and sight distance requirements of the highway.
- Relate to freeway profiles with access ramps.
- Provide a visually interesting entrance to the facility
 - determine how existing vegetation can be used to advantage.
 - align roads and design grades to save desired existing vegetation and site features.
 - plan drainage patterns to minimize the amount and depth of ditches along entrance ramps.
- Reduce visual scale of parking areas as much as possible.
 - screen parking areas from highway
 - leave islands of native or planted landscape and berms within larger parking areas, to break down the expanse of pavement into small spaces.
 - for rest areas produce a conceptual underground drainage plan, showing location of drain inlets and storm collection system and outfalls. Co-ordinate this with vegetation and features to remain.
- Produce a contour plan of the roadway and parking area and environs, showing the integration of the access roads and parking into the site.

.5 Complete preliminary grading plans for overall site.

- Extend the grading design exercise throughout the balance of the facility site.
 - identify areas to be saved as no cut/no fill areas.
 - produce contour plans around building, picnic area, walkways, and other facilities.
 - identify drainage pattern and any necessary underground storm drainage.
- Note that overall site grading may identify some problems which require refinement to the parking areas or access road grading.

.6 Complete preliminary building and utility layouts.

- Building
 - produce general concept of building floorplan and elevations.
 - produce detailed site plan and grading plan for the area immediately around the building.
- Water
 - mark location of well or other water supply on site plan.
 - design schematic distribution system, allowing for irrigation supply connections if applicable, and avoiding trees and landscape features to remain with pipe routings.
 - provide a product plan to guide the installation of sleeves for future irrigation if applicable. This will require a conceptual layout of the irrigation system.
- Wastewater
 - locate septic fields in conjunction with the overall site plan
 - eg. locate septic fields under picnic or open play areas.
 - consider splitting a large septic field into two smaller fields separated by existing vegetation, to avoid an over-size clearing.
 - route sewer pipe around trees/features to remain.
 - consider required maintenance access routes to facilities i.e. sewage tank or pumpout - these could be combined with walkway alignments to avoid unnecessary pavement or site disruption.
- Electrical & Telephone
 - locate pole drop in a low visibility location - not in a viewing area.
 - provide underground distribution throughout at rest areas or viewpoint/information areas.
 - route distribution around landscape features to remain.

.7 Cost estimating

- Produce detailed cost estimates for:
 - land cost
 - capital cost
 - maintenance and operation cost
- Confirm that budget has been allocated.
- Confirm that costs are affordable within allocated budget.
- Select priorities to bring project within approved budget.

.8 Working Drawings and Specifications

- On approval of detail design and related budgets, prepare working drawings including the following:
 - site layout plans
 - site grading plans
 - site utilities
 - planting and vegetation management plans
 - irrigation plans (if applicable)
 - road and utility profiles
 - architectural plans, elevations and details for buildings and structures
 - construction details as required
- Produce written specifications and Special Provisions:
 - Invitation to Tender
 - Instructions to Bidders
 - Form of Tender
 - Form of Contract
 - Supplementary General Conditions
 - Technical specifications

.9 Field Reviews During Construction

- Provide field review and contract administration services during construction as required by the scope of the construction.
- Field review services should include:
 - flagging of existing vegetation/features to remain.
 - confirmation of protective fencing around same.
 - field review during selective clearing operations.
 - field reviews during rough grading.
 - review of final rough grade prior to spreading topsoil.
 - review of topsoil placement.
 - review of selective pruning.
 - review of imported plant materials at the nursery.
 - review of planting and tree staking in the field
 - hydrostatic tests and pipe bedding review for irrigation.
 - coverage review for irrigation.
 - review for substantial performance.
 - review(s) for maintenance performance.
 - review for final performance.

7.0 Use of Professionals

Regional Managers are encouraged to appoint the appropriate specialist disciplines to the planning and design of roadside facilities.

.1 The professionals involved and their associated duties should include:

- **Landscape Architect** as project coordinator, and responsible for overall planning and design, site working and grading drawings, and field reviews.
- **Civil Engineer** for utility supply, and detailed design of roadway and utility systems, and bulk fill and excavation aspects.
- **Architect** for design of buildings and overhead structures. The Architect may be supplemented by mechanical, structural and electrical engineers in detailing of proposed site buildings.
- **Environmental Specialist** for assessment of the implications of development for adjacent waterbodies, fisheries, and wildlife.

.2 Appointment of Landscape Architects to the project should be at the earliest possible date during the alignment studies for new highways. This early appointment will allow roadside facility design to go in tandem with highway design.

8.0 Summary of Roadside Facility Planning and Design Method

.1 The Site Selection Process for rest areas should include:

- Spacing analysis.
- Base data collection of topography, vegetation, cadastrals, soils, visual analysis, airphotos for study area.
- Identify candidate sites.
- Field visit candidate sites.
- Analyze candidate site qualities.
- Produce schematic concept diagrams for candidate sites.
- Determine availability of water, wastewater disposal, and electrical, by on site means or connections to municipal systems.
- Compare candidate sites by objective means.
- Select preferred site(s)
- Document site selection process, and make available all base data to rest area designers.

.2 The Detail Design and Construction Process for rest areas should include:

- Detail survey of rest area site, with 0.5 m contours, and location of special elements marked in the field by the designer (eg. existing trees, rock outcroppings, water features, historical features, trails, etc.)
- Refinement of schematic concept diagrams to respond to detail survey.
- Field review of schematic concept by the designer.
- Preliminary design of road/parking area alignments and grades. Road grades should relate to both the proposed freeway profiles, and existing topography, using the contour method.
- Preliminary grading design of the overall site. This will allow for relation of proposed buildings, picnic areas, and landforms to existing topography and to proposed roadways.
- Preliminary utility and building layouts. These should address the extent of underground storm drainage and ditches, location of wells and septic field, routing of electrical supply, and siting of buildings in relation to grades.
- Cost estimates and confirmation of budget and scope of project.
- Working drawings to include site layout, site grading, site utilities, planting, irrigation (if applicable), road and utility profiles, architectural plans for buildings and structures, construction details and specifications.
- Field reviews during construction, by the designer of the rest area, to encourage adherence to the intent of the design and specifications. This could be supplemental to the administration of the Field Engineer.