CHAPTER F
ROADSIDE FACILITIES

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ROADSIDE FACILITIES

F.1 VEHICLE INSPECTION STATIONS

F.1.1 Introduction

Vehicle inspection stations are checkpoints established at locations throughout the highway system. Their primary purpose is to facilitate enforcement of regulations governing the trucking industry. The stations located near provincial boundaries are initial contact points for incoming vehicles. Those near major urban centres provide service to the trucking industry by issuing permits, and checking weights prior to vehicle departure from point of origin.

The vehicle inspection station (VIS) standards used in the province can be divided into three general classes: A, B and C. Standard site layout plans for class A, B and C, including details of access geometrics, are provided in Figures F-1.2, F-1.3, F-1.4a and F-1.4b. Although these plans show a standard, details of a vehicle inspection station, such as scales, buildings and parking areas, are designed to suit each location. Although the on-site details are customized, the acceleration/deceleration lanes, tapers and turning roadways will have an impact on the level of service on the adjacent highway. They should be designed based on standard highway geometric design considerations (functional classification, design speed, divided/undivided, gradient, traffic volume, etc.). Vehicle inspections are also sometimes undertaken at truck turnouts which serve as spot check sites. These are described in Section F.2.4.

F.1.2 Class A VIS

Class A is the standard vehicle inspection station for divided highways. This layout provides a high speed off-ramp and on-ramp, which ensures minimal impact on through traffic operations under normal conditions. The standard treatment also includes 600m of acceleration distance, including ramp and parallel lane. Depending on the level of service on the highway and highway grades, the designer may extend or shorten the parallel lane.

The standard treatment includes a satellite site on the opposite side of the highway, which may allow vehicles travelling in the opposite direction to be checked also. A median cross-over is generally not provided, due to the operational problems that can occur where large vehicles have to cross a busy divided highway.

Generally, if the level of service on the divided highway is A, or in the lower half of B (that is, up to 21,000 AADT on a typical rural four-lane divided highway), the standard acceleration and deceleration lanes are adequate. For higher volumes and/or uphill gradients, longer acceleration lanes may be used. A set of performance curves for the Alberta design truck 180 g/w (which is about the 85th percentile mass:power ratio for loaded trucks in the province) is provided. It enables the designer to gauge the impact of gradients and estimate the approximate merge speed for heavy trucks. Although 80 km/h is considered a desirable merge speed, it is frequently not practical to provide a sufficiently long acceleration lane to achieve that speed, considering that 1200m would be needed on a level grade. A merge speed of 70 km/h is considered adequate in general for this type of facility.

Bearing in mind the advantages for truck deceleration and acceleration, it is preferable to locate major VISs near the top of smooth crest curves, where possible, especially on busy divided highways. The location of the access and egress should have good sight distance (decision sight distance is desirable) to facilitate safe merge and diverge manoeuvres.

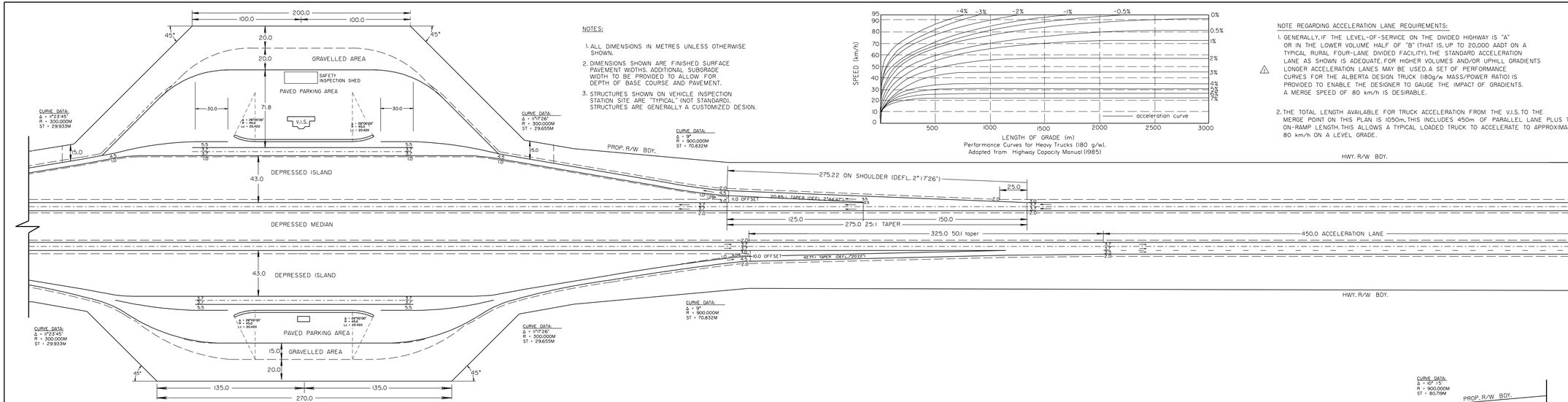
F.1.3 Class B VIS

Class B is the standard vehicle inspection station for permanent, manned stations on two-lane undivided highways. This layout provides for some deceleration and acceleration of vehicles using the station, and it also provides a bypass lane for through traffic. The length of the parallel acceleration lane may be varied, depending on the level of service on the highway, and a range of lengths is suggested on the figure. The truck performance curves are also included for the designer's use.

F.1.4 Class C Mobile VIS

The Class C VIS is the standard layout for portable or mobile vehicle inspection stations. In recent years, some of these sites have been equipped with automatic weigh scales, which are normally unmanned and may be used by the public.

The layout includes acceleration, deceleration and bypass lanes, the length of which depend on the traffic volume on the highway. Notes are included on Figures F-1.4a and F-1.4b as a guideline for provision of auxiliary lanes.



NOTES:

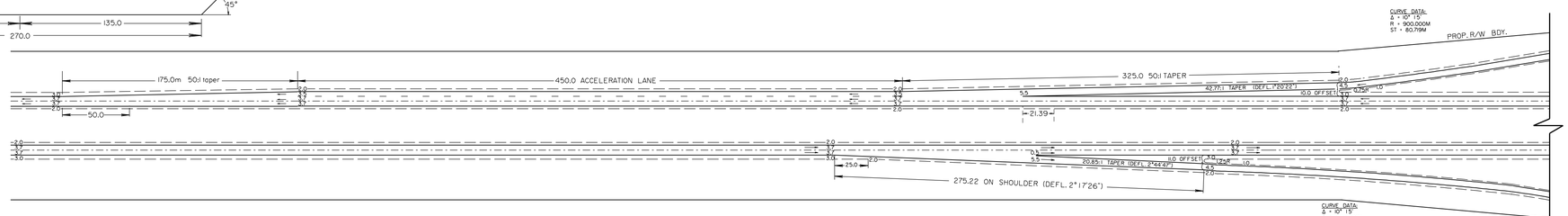
1. ALL DIMENSIONS IN METRES UNLESS OTHERWISE SHOWN.
2. DIMENSIONS SHOWN ARE FINISHED SURFACE PAVEMENT WIDTHS. ADDITIONAL SUBGRADE WIDTH TO BE PROVIDED TO ALLOW FOR DEPTH OF BASE COURSE AND PAVEMENT.
3. STRUCTURES SHOWN ON VEHICLE INSPECTION STATION SITE ARE "TYPICAL" (NOT STANDARD). STRUCTURES ARE GENERALLY A CUSTOMIZED DESIGN.

Performance Curves for Heavy Trucks (180 g/w).
Adapted from Highway Capacity Manual (1985)

NOTE REGARDING ACCELERATION LANE REQUIREMENTS:

1. GENERALLY, IF THE LEVEL-OF-SERVICE ON THE DIVIDED HIGHWAY IS "A" OR IN THE LOWER VOLUME HALF OF "B" (THAT IS, UP TO 20,000 AADT ON A TYPICAL RURAL FOUR-LANE DIVIDED FACILITY), THE STANDARD ACCELERATION LANE AS SHOWN IS ADEQUATE. FOR HIGHER VOLUMES AND/OR UPHILL GRADIENTS LONGER ACCELERATION LANES MAY BE USED. A SET OF PERFORMANCE CURVES FOR THE ALBERTA DESIGN TRUCK (180g/w MASS/POWER RATIO) IS PROVIDED TO ENABLE THE DESIGNER TO GAUGE THE IMPACT OF GRADIENTS. A MERGE SPEED OF 80 km/h IS DESIRABLE.

2. THE TOTAL LENGTH AVAILABLE FOR TRUCK ACCELERATION FROM THE V.I.S. TO THE MERGE POINT ON THIS PLAN IS 1050m, THIS INCLUDES 450m OF PARALLEL LANE PLUS THE ON-RAMP LENGTH. THIS ALLOWS A TYPICAL LOADED TRUCK TO ACCELERATE TO APPROXIMATELY 80 km/h ON A LEVEL GRADE.



No.	REVISIONS	BY	DATE
1	REV ACCEL LANE NOTES	BK	08/99

Alberta INFRASTRUCTURE

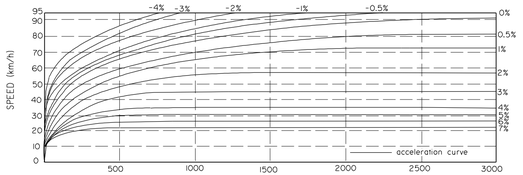
FIGURE F-1.2

Date: APRIL 1995

CLASS "A" VEHICLE INSPECTION STATION
(Standard Layout and Access on Divided Highways)

Prepared By: LT	Checked By: BK	Scale: 1:2000

Graphics File: dwh12.mon



Performance Curves for Heavy Trucks (180 g/w).
Adapted from Highway Capacity Manual (1985)

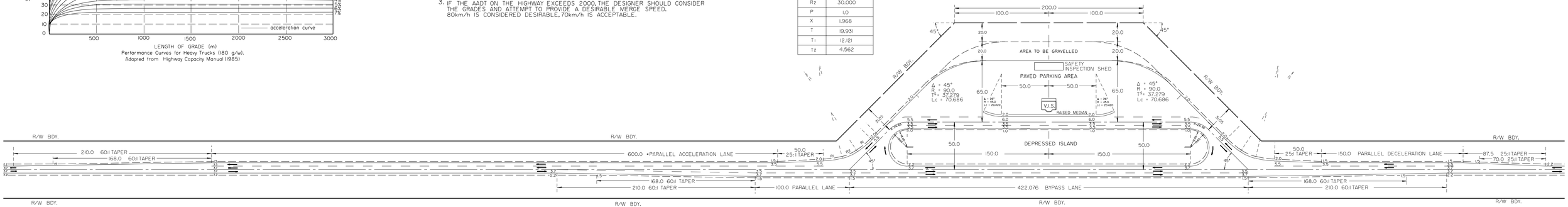
NOTES REGARDING ACCELERATION/DECELERATION LANES:

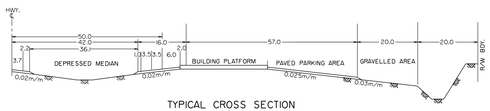
•1. IF THE AADT ON THE HIGHWAY IS LESS THAN 1000, PARALLEL ACCELERATION AND DECELERATION LANES ARE NOT REQUIRED.

2. IF THE AADT ON THE HIGHWAY IS BETWEEN 1000 AND 2000, PARALLEL ACCELERATION AND DECELERATION LANES AS SHOWN ON THIS FIGURE ARE ADEQUATE.

3. IF THE AADT ON THE HIGHWAY EXCEEDS 2000, THE DESIGNER SHOULD CONSIDER THE GRADES AND ATTEMPT TO PROVIDE A DESIRABLE MERGE SPEED. 80km/h IS CONSIDERED DESIRABLE, 70km/h IS ACCEPTABLE.

3-CENTRE CURVE DATA (REFER TO FIGURE D-5.10) SYMMETRIC	
Δ	42° 42' 34"
Δ1	14° 35' 33"
Δ2	13° 31' 27"
R1	61.0
R2	30.000
P	1.0
X	1.968
T	19.931
T1	12.121
T2	4.562





TYPICAL CROSS SECTION

NOTES:

1. ALL DIMENSIONS IN METRES UNLESS OTHERWISE SHOWN.
2. DIMENSIONS SHOWN ARE FINISHED SURFACE PAVEMENT WIDTHS. ADDITIONAL SUBGRADE WIDTH TO BE PROVIDED TO ALLOW FOR DEPTH OF BASE COURSE AND PAVEMENT.
3. STRUCTURES SHOWN ON VEHICLE INSPECTION STATION SITE ARE "TYPICAL" (NOT STANDARD). STRUCTURES ARE GENERALLY A CUSTOMIZED DESIGN.

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FIGURE F-1.3 (UNDER REVIEW)

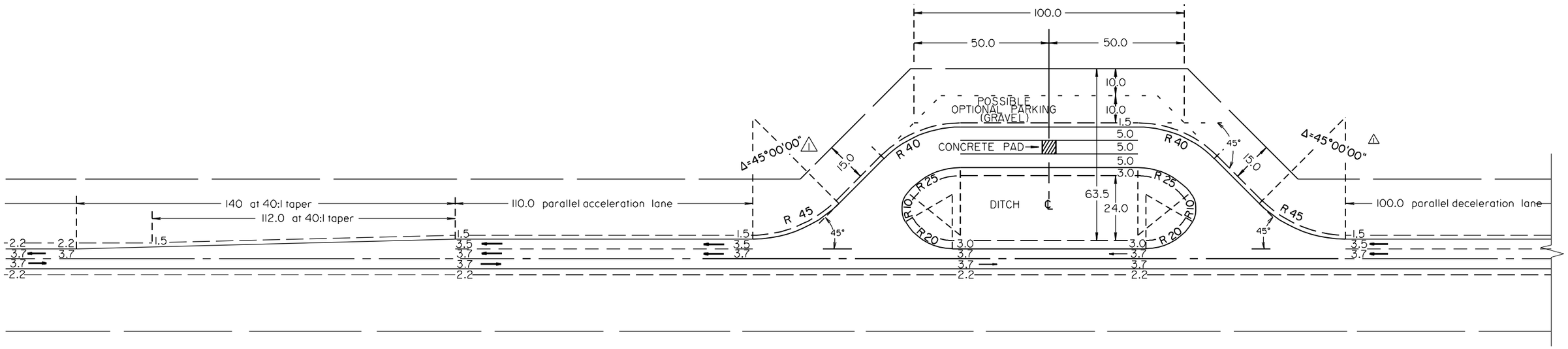
Date: APRIL 1995

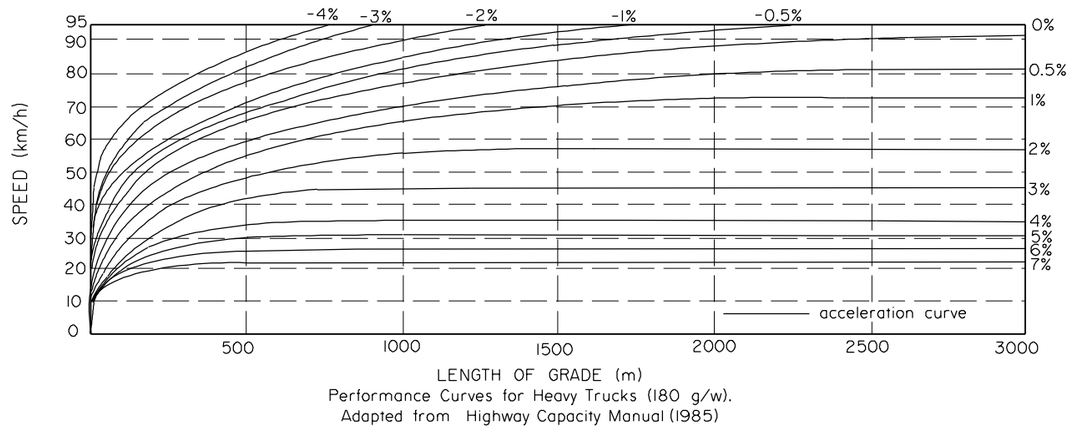
CLASS "B" VEHICLE INSPECTION STATION

(Standard Layout and Access on Undivided Highways)

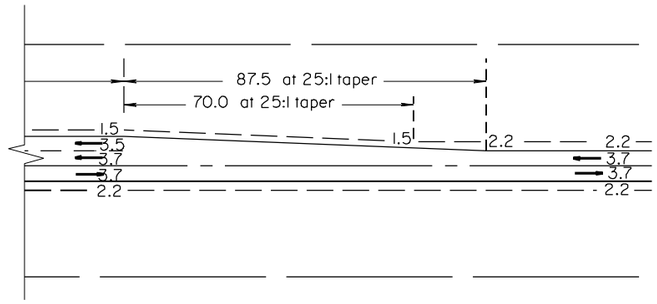
Prepared By: LT	Checked By: BK	Scale: 1:2000	PAGE F-7

Graphics File: deh13.man





Performance Curves for Heavy Trucks (180 g/w).
Adapted from Highway Capacity Manual (1985)



NOTES REGARDING AUXILIARY LANES:

1. IF THE AADT ON THE HIGHWAY IS LESS THAN 1000, BYPASS LANES PARALLEL ACCELERATION AND DECELERATION LANES ARE NOT REQUIRED.
2. IF THE AADT ON THE HIGHWAY IS BETWEEN 1000 AND 2000, THE PARALLEL ACCELERATION AND DECELERATION LANES AS SHOWN ON THIS FIGURE ARE ADEQUATE.
3. IF THE AADT ON THE HIGHWAY EXCEEDS 2000, A DETAILED ANALYSIS SHOULD BE UNDERTAKEN TO DETERMINE IF AN EXCLUSIVE LEFT TURN LANE IS WARRANTED AS SHOWN IN SECTION D.6 BASED ON MAIN ROAD VOLUMES AND % LEFT TURN. THE DESIGNER SHOULD ALSO CONSIDER EXTENDING THE ACCELERATION LANE IF REQUIRED DUE TO GEOMETRICS TO PROVIDE A MERGE SPEED OF 80km/h (DESIRABLE) FOR THE DESIGN TRUCK. REFER TO TRUCK PERFORMANCE CURVES.

NOTES:

1. ALL DIMENSIONS IN METRES UNLESS OTHERWISE SHOWN.
2. DIMENSIONS SHOWN ARE FINISHED SURFACE PAVEMENT WIDTHS. ADDITIONAL SUBGRADE WIDTH TO BE PROVIDED TO ALLOW FOR DEPTH OF BASE COURSE AND PAVEMENT.
3. STRUCTURES SHOWN ON VEHICLE INSPECTION STATION SITE ARE "TYPICAL" (NOT STANDARD). STRUCTURES ARE GENERALLY A CUSTOMIZED DESIGN.

No.	REVISIONS	BY	DATE
2	REV AUXILIARY LANE NOTES	BK	08/99
1	Δ CHANGED ON 3-CENTRE CURVES	R.M.	05/96

Alberta INFRASTRUCTURE

FIGURE F-1.4a

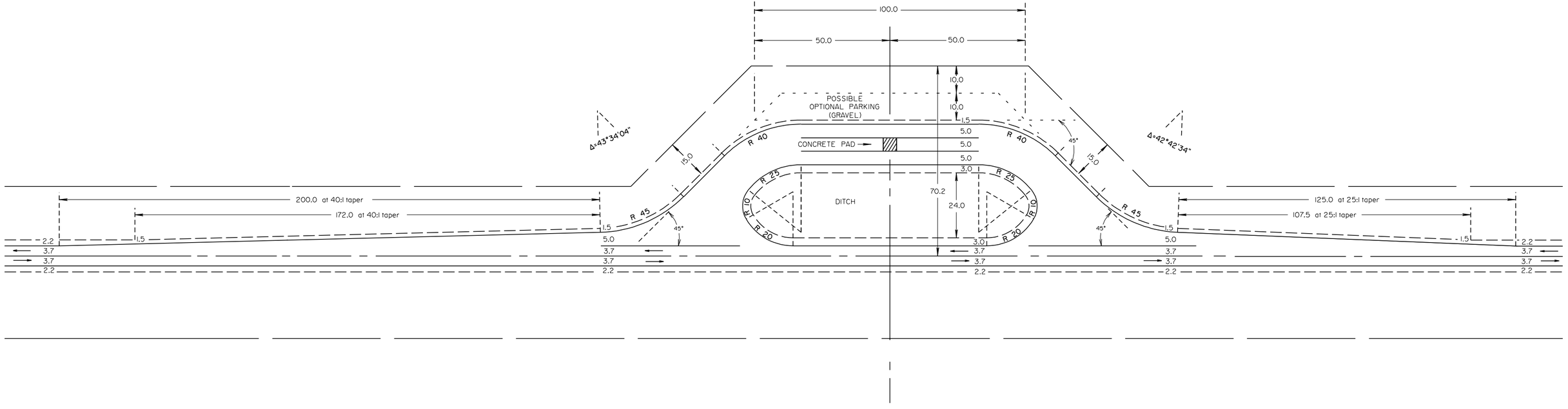
Date: APRIL 1995

CLASS "C" VEHICLE INSPECTION STATION

(Standard Layout and Access on Undivided Highways)

Prepared By: LT	Checked By: BK	Scale: 1:1000	PAGE F-9

Graphics File: debf14a.man



NOTE REGARDING AUXILIARY LANES:

IF THE AADT ON THE HIGHWAY EXCEEDS 1000, ADDITIONAL AUXILIARY LANES MAY BE REQUIRED. REFER TO FIGURE F-1.4a.

NOTES:

1. ALL DIMENSIONS IN METRES UNLESS OTHERWISE SHOWN.
2. DIMENSIONS SHOWN ARE FINISHED SURFACE PAVEMENT WIDTHS. ADDITIONAL SUBGRADE WIDTH TO BE PROVIDED TO ALLOW FOR DEPTH OF BASE COURSE AND PAVEMENT.
3. STRUCTURES SHOWN ON VEHICLE INSPECTION STATION SITE ARE "TYPICAL" (NOT STANDARD). STRUCTURES ARE GENERALLY A CUSTOMIZED DESIGN.

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Alberta INFRASTRUCTURE

FIGURE F-1.4b

Date: APRIL 1995

CLASS "C" MOBILE INSPECTION STATION (MIS)

(For Undivided Highways with AADT Less than 1000.)

Prepared By: LT	Checked By: BK	Scale: 1:1000	PAGE F-11

Graphics File: debf15.man

F.2 HIGHWAY SAFETY REST AREAS

F.2.1 Introduction

Highway safety rest areas are considered an integral part of modern highway systems. They provide drivers with a greater measure of safety, comfort and convenience. The concept of building a comprehensive network of highway safety rest areas throughout the primary highway system is expected to provide benefits to society.

Safety rest areas serve three primary purposes:

- Improve safety by providing places for travellers to rest periodically
- Provide suitable places for emergency stops and access to toilet facilities, telephones, etc.
- Provide tourist and interpretive information for travellers, create a positive image of the province and thus promote tourism.

Although it is difficult to calculate the benefits of safety rest areas in economic terms, the U.S. Transportation Research Board has developed a preliminary methodology for calculating the benefits. It is based on the rest area's role in reducing shoulder stop and fatigue caused collisions. The board has also suggested a procedure for estimating the comfort and convenience value of rest areas. There are other benefits such as the beneficial impact on tourism. However, there is not sufficient data available to calculate these in economic terms.

The safety rest areas currently in use in Alberta can be divided into four categories:

Class I Major rest areas accommodating cars, recreational vehicles and trucks, and located along existing or proposed expressways and freeways

Class II Smaller rest areas accommodating cars and recreational vehicles, and usually located along two-lane highways (typical highway campground or day-use area)

Class III(a) Basic car, recreational vehicle, and truck turnouts located along all primary highways. Class III(a) rest areas are essentially a shoulder widening with vehicles stopping on the pavement adjacent to the shoulder.

Class III(b) Roadside turnouts for divided highways. This type of turnout is intended to accommodate all vehicle types and provide an offset between the turnouts and the travel lanes to enhance safety. The Class III(b) typical design was adopted by Alberta Infrastructure in 1999 for use on the North-South Trade Corridor and the Yellowhead Highway. This type of treatment is preferred (over the Class III(a) type) for use on all divided highways or highways that are identified for future twinning.

Rest area spacing has been the subject of considerable study in the U.S. At present, the average spacing on the entire U.S. interstate system is approximately 80 km. Based on that study and experience in Alberta, it has been concluded that it is desirable to make provision for vehicles to stop on every 90 km length of highway. The provision of rest areas on higher volume routes, especially divided highways, is most beneficial as this will serve the greatest need.

The optimum spacing for Class III rest areas is affected by volume and particularly type of traffic. Spacing in this class may vary widely. Turnouts would normally be quite close together on highly scenic recreational highways and more widely spaced on low volume non-recreational roads. In general, an average spacing of 30 to 40 km throughout the highway system is considered desirable.

The three classes of rest areas are described in more detail in the following sections. These descriptions are typical and actual designs may be different due to site or traffic demands. It should be noted that only Class I and III rest areas provide for large truck access and parking. Class II rest areas are generally suitable for passenger vehicles and recreational vehicles only. When calculating the existing or desired spacing between rest areas both Class I and Class III facilities should be considered as they both serve all design vehicles.

F.2.2 Class I - Major Rest Areas

Class I rest areas are recommended only on the existing and proposed freeway system. Development of these rest areas may be staged over a period of time by developing lower class facilities initially and upgrading to the full Class I standards when traffic warrants.

Class I rest areas vary in size and services provided, but generally have flush toilets, water and sewer systems, dump stations, picnic areas, waste receptacles, pet exercise areas, telephone, lighting and landscaping, and surfaced parking for cars, recreational vehicles and trucks. Travel information is normally provided. All facilities of the rest area are designed to be fully accessible and special design features such as special phones may be provided for the visually and hearing impaired.

The desirable spacing between Class I rest areas on the divided highway system is 90 km. For practical reasons Class III(b) roadside turnouts may be built in lieu of Class I rest areas where there is insufficient traffic to justify a full Class I facility. The number of parking spaces is dependent on the anticipated demand, which is estimated based on traffic volume, traffic composition, functional classification and estimated length of stay. Rest areas should not be located in or adjacent to urban areas because of the competition with commercial facilities and the potential for increased vandalism.

The typical access/egress to the Class I rest area is shown in Figure F-2.2. Class I rest areas are designed to serve one direction of traffic only, and no median crossovers are permitted. The length of deceleration taper and off-ramp as shown is generally more than adequate to eliminate interference with the through traffic flow on Alberta's four-lane divided highways in a rural setting.

Generally, if the level of service on the divided highway is A or in the lower volume half of B, (that is, up to 21,000 AADT on a typical four-lane divided facility), the standard acceleration distance as shown is adequate. For higher volumes and/or uphill gradients, longer acceleration lanes may be used. The general guideline for provision of an additional acceleration lane for Class A VISs, as outlined in Section F.1.1, may be applied to Class I rest areas also. That guideline is shown on Figure F-1.2.

F.2.3 Class II - Smaller Rest Areas

Class II rest areas are usually located along two-lane arterial highways and have toilets, picnic facilities, waste receptacles and surfaced or unsurfaced parking for cars and recreational vehicles. These areas may also include telephone, lighting, well or cistern, and bulletin boards. These rest areas are intended to be day-use only. However, this may be interpreted as allowing overnight stops, especially where camping facilities are not available within a reasonable distance.

Class II rest areas are generally accessible only to cars and recreational vehicles. They are usually located along two-lane highways with lower traffic volumes, and should have a 90 km spacing (similar to Class I), dependent on the availability of commercial facilities in the area. These rest areas are accessible from both directions of travel.

The typical access to a Class II rest area is shown on Figure F-2.3. The typical layout includes a generous provision for acceleration/deceleration and bypass, which is generally adequate for the volumes that are found on two-lane undivided highways in Alberta. In cases where the volume on the highway is relatively low, that is, less than 1800 AADT, a lower standard treatment may be used. Designers should use the intersection treatment design guidelines as outlined in Section D.6 to design the access to Class II rest areas where the highway AADT is less than 1800.

F.2.4 Class III Rest Areas (Turnouts)

Class III rest areas, also known as turnouts, are functional and desirable elements on heavily travelled roads and on those carrying recreational traffic. In general, turnouts are paved areas outside the normal continuous paved shoulder, where parking space is provided at a safe distance away from the through travel lanes. On undivided highways, turnouts are generally adjacent to the shoulder. In 1999 Alberta Infrastructure adopted a policy of constructing divided highway roadside turnouts at an offset from the highway. The separation is in the range of 50 m. This is intended to enhance safety for road users and provide a more comfortable facility for weary drivers to take a break. This initiative is expected to reduce the prevalence of driver fatigue which can contribute to collisions especially on routes that carry predominantly long distance traffic.

Planning studies have been undertaken to identify desired locations of Class III(b) roadside turnouts based on spacing, traffic volumes, proximity to urban centres etc. Studies have been completed for the North-South Trade Corridor and the Yellowhead Highway. Studies for other divided highways and future divided highway corridors are ongoing.

Construction of the planned facilities will generally be undertaken in conjunction with other major roadwork in the vicinity.

When the location of a highway is in an area of particular beauty and where a large percentage of the traffic volume is recreational, many turnouts may be provided. Such turnouts provide drivers the opportunity to pull off the through travel lanes, safely stop, and take in the scenery. Litter containers and possibly washroom and telephone facilities may be included in this type of turnout.

Class III rest areas (turnouts) provide the only opportunity outside of the Class I rest areas and commercial sites for large trucks to pull off the highway.

The maximum desirable spacing for turnouts is 50 to 60 km on highways carrying substantial truck traffic. Since turnouts are generally required on both sides of the highway, they should be offset by a minimum of one km. The near side turnout should be located in advance of the far side turnout. On divided highways roadside turnouts are only accessible for one direction of travel and therefore the 50 to 60 km spacing should be used for each direction.

Class III rest areas are required on divided and undivided highways. The typical layouts shown in Figures F-2.4a, b and c are intended for undivided highways. Figures F-2.4d, e, f and g show typical layouts for existing or future divided highway routes. The typical turnouts in Figure F-2.4c are intended for recreational or scenic routes only (generally lower volume). Figure F-2.4b is used on high volume (AADT>3000) log haul routes, and Figure F-2.4a is used in all other cases.

Figure F-2.4c illustrates two types of roadside turnouts used on low volume recreational roads. The deep pull-off, usually located at a viewpoint, provides a large pavement area that accommodates angle parking, while the standard pull-off provides a smaller paved area for parallel parking.

All of the turnouts (except those on recreational routes) include a two metre shoulder adjacent to the parking area. This is provided to facilitate vehicle inspections.

Parallel Acceleration/Deceleration Lanes

Generally, it is desirable to provide parallel acceleration and deceleration lanes and tapers with turnouts to ensure safe merging and diverging operations.

However, because of the high cost of providing additional lanes and because of the variety of traffic conditions that may exist, a design guideline has been developed to promote greater cost effectiveness. The guideline is as follows:

Undivided Highways (Class III(a))

1. If AADT<1000, parallel lanes are not required.

2. If 1000<AADT<3000, standard acceleration and deceleration lanes as shown on Type A or B of Figure F-2.4a should be used. The type is chosen based on highway design designation.

3. If AADT>3000. On log haul routes Figure F-2.4b is used; on all other routes Figure F-2.4a is used. The designer should consider the acceleration characteristics of the design truck (180 g/w mass/power ratio) and gradient and provide for a suitable merge speed. The desirable minimum merge speed is 80 km/h; however, 60 km/h is considered adequate. The length of parallel lane should not exceed 600m for practical reasons.

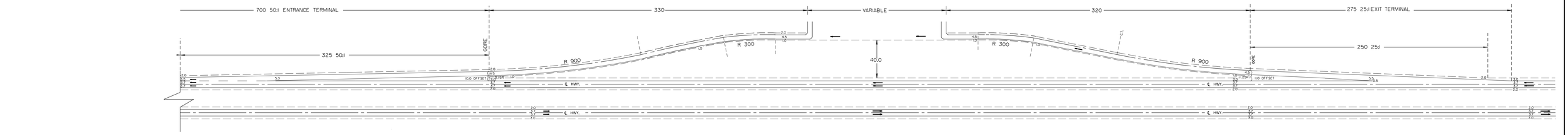
Divided Highways (Class III(b))

On rural divided arterial highways, the typical design layouts shown in Figures F-2.4d and e, may be used.

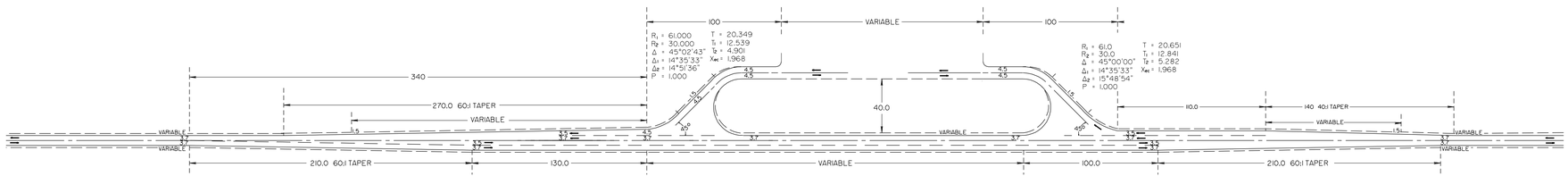
Ideally, truck turnouts should be located near the top of smooth crest curves, provided that sight distance restrictions do not occur. This will aid the deceleration and acceleration of trucks using the facility and may allow the designer to reduce the length of parallel lane.

F.3 MAJOR DEVELOPMENT ACCESS (HIGHWAY COMMERCIAL)

Figure F-3 illustrates a typical frontage road layout for service centres along divided highways. For major commercial developments along undivided highways developers should comply with the Access Management Guidelines (Chapter I of this document) and the guidelines for design of at-grade intersections shown in Chapter D.



RURAL DIVIDED (RFD/RAD - 130/120)



RURAL ARTERIAL UNDIVIDED (RAU - 120/110)

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3			
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Alberta INFRASTRUCTURE

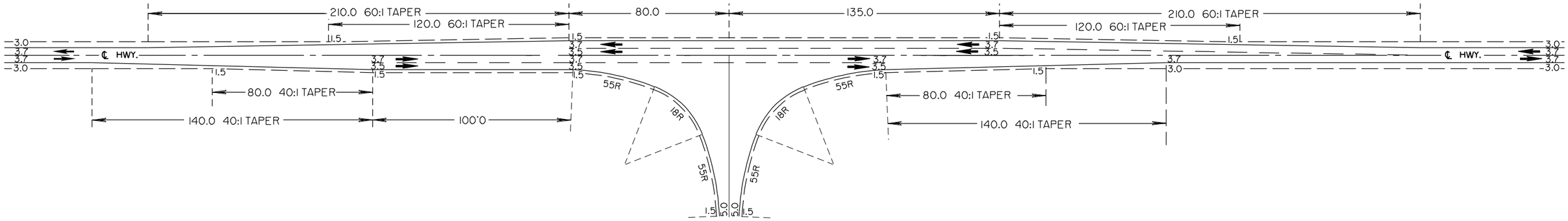
FIGURE F-2.2

Date: APRIL 1995

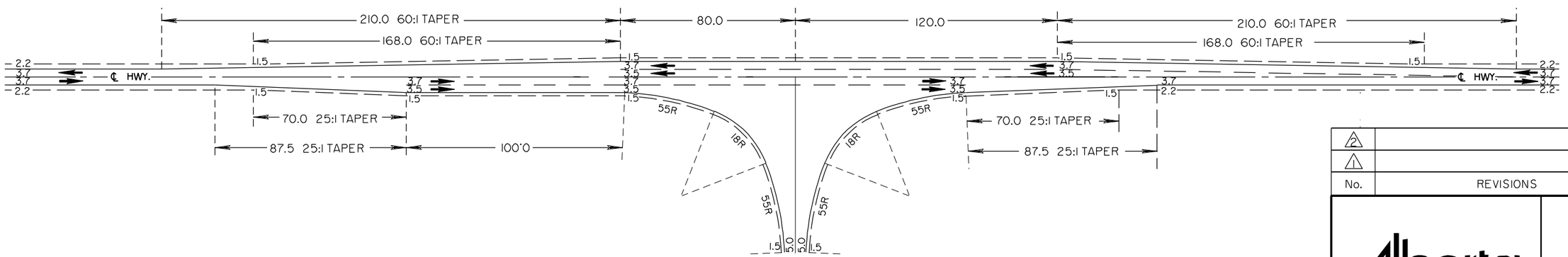
CLASS I
MAJOR REST AREA
(Typical Layout and Access)

Prepared By: LT	Checked By: BK	Scale: 1:2000	PAGE F-17

Graphics File: dab122.man



RURAL ARTERIAL UNDIVIDED (RAU-213.4-120)



RURAL ARTERIAL UNDIVIDED (RAU-211.8-110)

No.	REVISIONS	BY	DATE
2			
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Alberta INFRASTRUCTURE

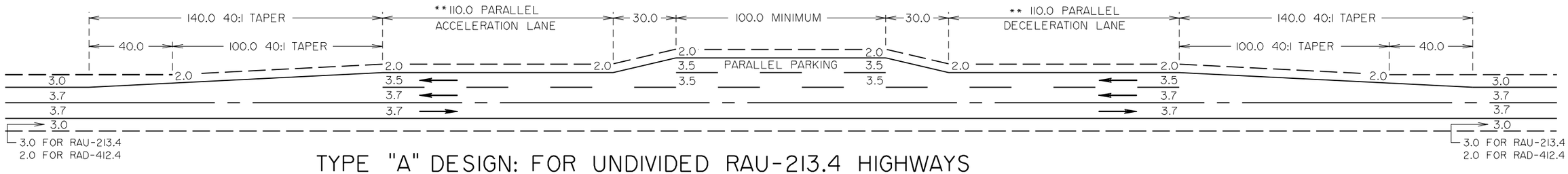
FIGURE F-2.3

Date: APRIL 1995

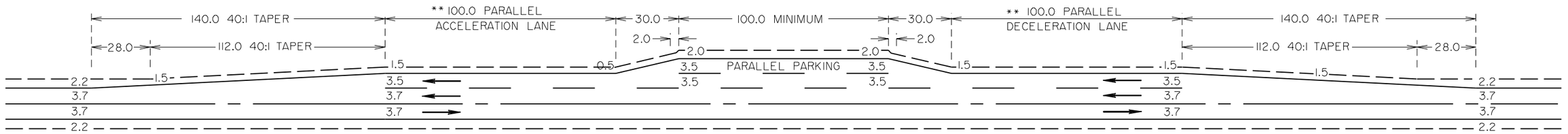
CLASS II
REST AREA
(TYPICAL ACCESS)

Prepared By: LT	Checked By: BK	Scale: 1:2000	PAGE F-19

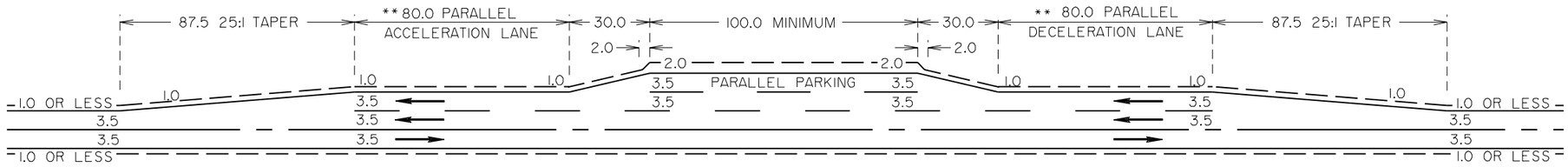
Graphics File: debf23.man



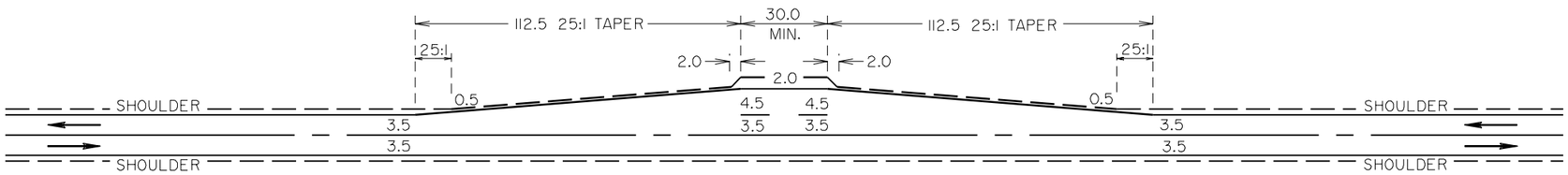
TYPE "A" DESIGN: FOR UNDIVIDED RAU-213.4 HIGHWAYS



TYPE "B" DESIGN: FOR UNDIVIDED RAU-211.8 HIGHWAYS



TYPE "C" DESIGN: FOR UNDIVIDED RAU-209 OR LOWER STANDARD HIGHWAYS WITH SHOULDER WIDTHS ONE METRE OR LESS



TYPE "D" DESIGN: MINIMUM TREATMENT FOR TURNOUTS ON LOW VOLUME*** ROADS.

*** NOTE: FOR TURNOUTS ON LOW VOLUME RECREATIONAL ROADS, REFER TO FIGURE F-2.4c

Notes:

1. Dimensions shown are finished surface pavement widths. Additional subgrade widths to be provided to allow for depth of base course and pavement.
2. All dimensions are expressed in metres unless otherwise noted.

** Notes regarding acceleration/deceleration lanes:

1. Where the AADT <1000, the parallel lane sections for acceleration and deceleration are not required.
2. Where 1000<AADT<3000 standard acceleration lanes as shown on type "A" or "B" should be used.
3. Where AADT >3000, designer should consider acceleration characteristics of the design truck (as shown on Figure F-1.2) and gradient and provide a suitable merge speed. Desirable minimum merge speed is 80km/h is adequate. Length of parallel lane should not exceed 600m.

△1

No.	REVISIONS	BY	DATE
△2			
△1	REV ACCEL/DECEL LANE NOTES	BK	08/99

Alberta INFRASTRUCTURE

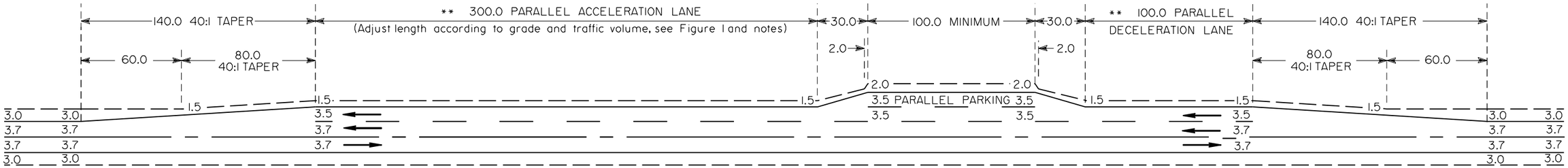
FIGURE F-2.4a

Date: APRIL 1995

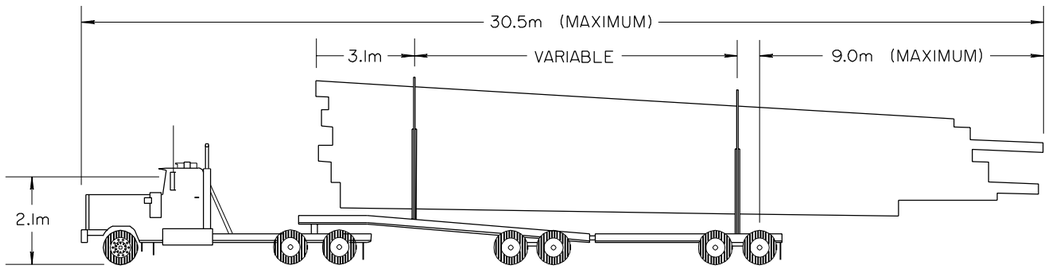
CLASS IIIa REST AREAS (ROADSIDE TURNOUTS)

Prepared By: LT	Checked By: BK	Scale: 1:2000	PAGE F-21

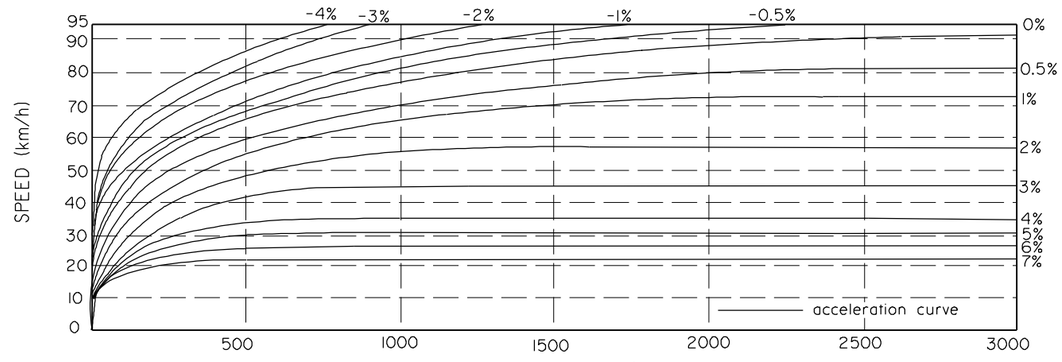
Graphics File: debf24a.man



TYPE "L" DESIGN: FOR HIGH TRAFFIC VOLUME LOG HAUL ROUTES



TANDEM-JEEP/POLE-TRAILER LOG HAUL TRUCK



Performance Curves for Heavy Trucks (180 g/w).
Adapted from Highway Capacity Manual (1985)

NOTES REGARDING ACCELERATION/DECELERATION REQUIREMENTS:

1. This roadside turnout is intended for log haul trucks as shown above. The maximum allowable width (from bunk to bunk) is 3.2m.
2. Where the AADT < 1000, the parallel lane sections for acceleration and deceleration are not required. Where 1000 < AADT < 3000 Type 'A' standard roadside turnout as shown on CB6-2.3M34A should normally be used.
3. The acceleration characteristics of the typical log haul truck can be estimated from Figure 1.
4. The desirable minimum merge speed at the end of an acceleration lane is 80 km/h. Merge speed of 60 km/h is considered adequate for this type of truck turnout. The length of parallel acceleration lane should not exceed 600 m for practical reasons.
5. Ideally, truck turnouts should be located near the top of smooth crest curves provided that sight distance restrictions do not occur. This will aid the deceleration and acceleration of trucks using the facility and may allow the designer to reduce the length of parallel lane.

NOTES:

1. DIMENSIONS SHOWN ARE FINISHED SURFACE PAVEMENT WIDTHS. ADDITIONAL SUBGRADE WIDTHS TO BE PROVIDED TO ALLOW FOR DEPTH OF BASE COURSE AND PAVEMENT.
2. ALL DIMENSIONS ARE EXPRESSED IN METRES UNLESS OTHERWISE NOTED.

No.	REVISIONS	BY	DATE
2			
1			

Alberta INFRASTRUCTURE

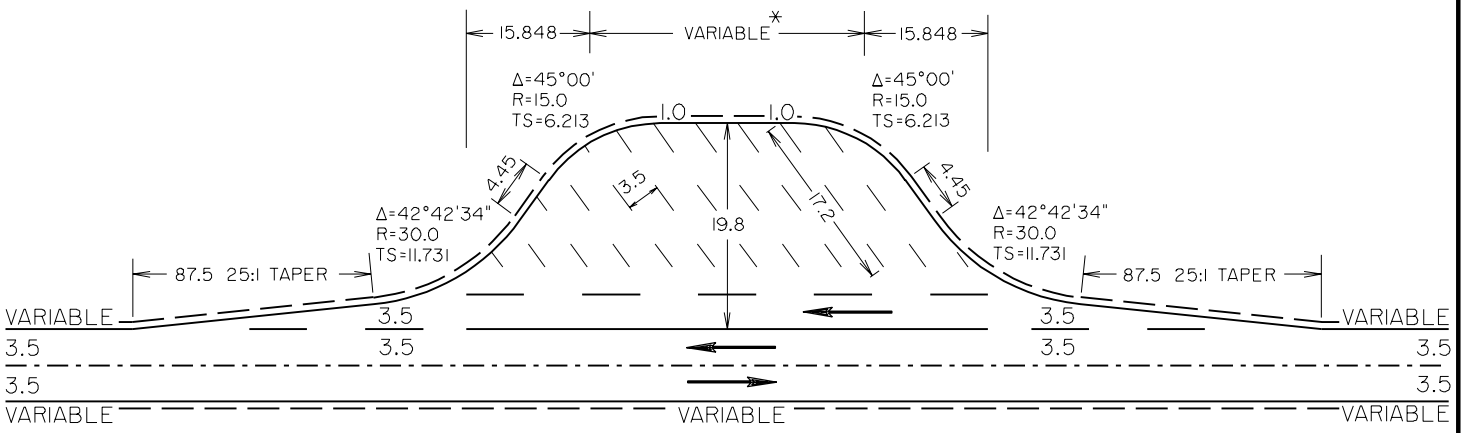
FIGURE F-2.4b

Date: APRIL 1995

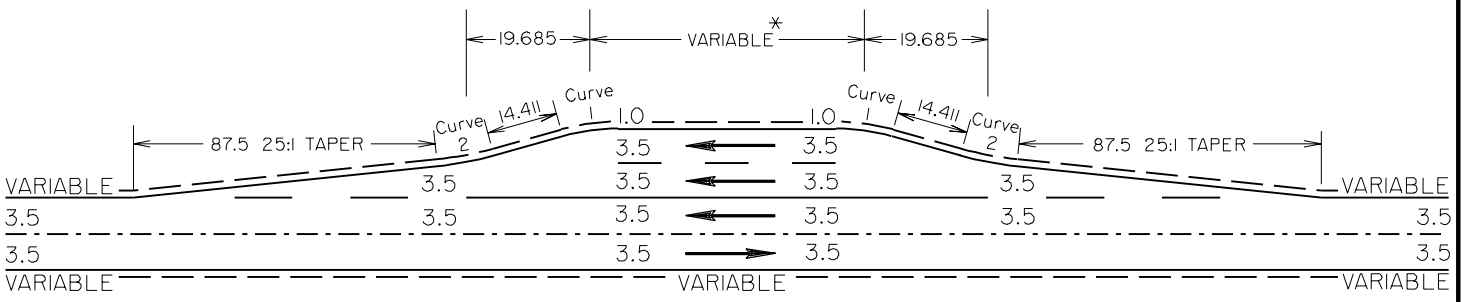
CLASS IIIa REST AREA (Roadside Turnout for High Traffic Volume, AADT>3000, Log Haul Routes)

Prepared By: LT	Checked By: BK	Scale: 1:1000	PAGE F-23

Graphics File: debf24b.man



TYPICAL DEEP TURNOUT



TYPICAL STANDARD TURNOUT

FOR LOW VOLUME RECREATIONAL ROADS, 60m LONG & 8m WIDE FROM EDGE OF SHOULDER (DESIRABLE), MINIMUM 6m.

	CURVE 1	CURVE 2
Δ	9°55'34"	7°38'08"
R	30	40
℄	2.605	2.669

NOTE:

* THE SUGGESTED MINIMUM LENGTH OF PULL-OFF is 30m.

ALL DIMENSIONS ARE EXPRESSED IN METRES UNLESS OTHERWISE NOTED.

No.	REVISIONS	BY	DATE
2			
1			

Alberta INFRASTRUCTURE

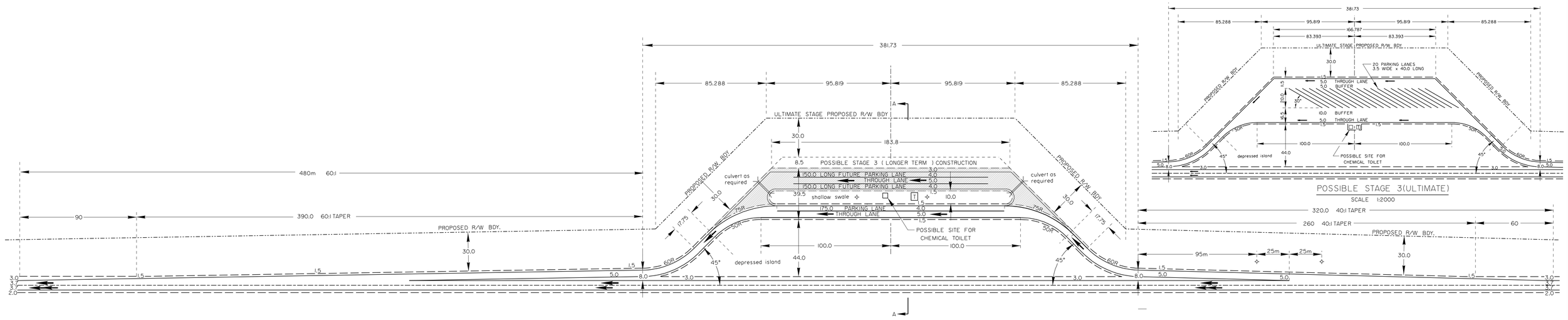
FIGURE F-2.4c

Date: APRIL 1995

CLASS IIIa REST AREA (Roadside Turnouts on Recreational Roads)

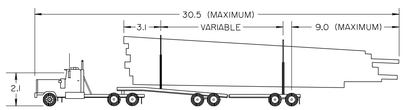
Prepared By: LT	Checked By: BK	Scale: N.T.S.	PAGE F-25

Graphics File: tigsfs01\reb\manual\chapters\chap-f\debf24c.man



POSSIBLE STAGE 3(ULTIMATE)

SCALE 1:2000



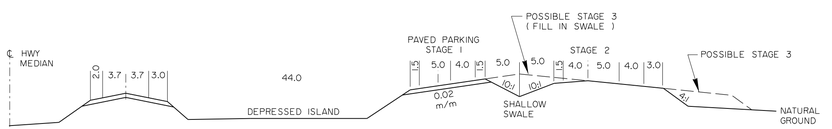
TANDEM-JEEP/POLE-TRAILER LOG HAUL TRUCK

N.T.S.

The template used for design of this turnout is based on a combination of the maximum outswing and off tracking that would occur with any of the typical Log Haul Truck-Trailer configurations with a 9m overhang. This layout is also suitable for a WB-36 Turnpike Double Truck and other smaller truck units.

NOTES

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. THIS IS A "TYPICAL" PLAN. DESIGNERS MAY CHOOSE OTHER LAYOUTS OR DIMENSIONS TO SUIT THE TOPOGRAPHY, TRAFFIC OR PHYSICAL CONSTRAINTS AT THE SITE.
3. WHERE POSSIBLE, SITES SHOULD BE SELECTED SO THAT THE ACCELERATION TAPER IS LOCATED ON A DOWN GRADE SLOPE AND THE DECELERATION TAPER ON AN UPGRADE SLOPE TO ASSIST VEHICLE OPERATION.
4. ADDITIONAL PARALLEL LANE LENGTH MAY BE PROVIDED AS REQUIRED BASED ON TRAFFIC AND GRADIENT.
5. CLASS III ROADSIDE TURNOUTS ARE TO BE BUILT IN STAGES. STAGE I HAS ADEQUATE PARKING FOR MODERATE TRAFFIC VOLUMES. STAGE 2 MAY BE CONSTRUCTED IF REQUIRED TO MEET DEMANDS IN THE FUTURE. IN SOME CASES IT MAY BE COST-EFFECTIVE TO DO THE STAGE 2 GRADING AND POSSIBLY THE ULTIMATE STAGE GRADING AT THE SAME TIME AS THE STAGE I WORK.
6. THE ACCELERATION AND DECELERATION TAPERS AS SHOWN ARE CONSIDERED SUITABLE WHERE THE DIVIDED HIGHWAY IS OPERATING AT LEVEL-OF-SERVICE 'A' AND THE TERRAIN IS RELATIVELY FLAT. WHERE THE LEVEL-OF-SERVICE IS LOWER OR THE ACCELERATION TAPER IS ON AN UPGRADE, THE NEED FOR A LONGER ACCELERATION LANE SHOULD BE ASSESSED. A MERGE SPEED OF 70 km/hr IS DESIRABLE.



TYPICAL CROSS-SECTION A-A

N.T.S.

NOTE:
DESIGNER MAY CHOOSE AN ALTERNATIVE CROSS-SECTION TO BETTER SUIT THE SITE TOPOGRAPHY.

LEGEND

- PROPOSED LIGHTING
- T PROPOSED TELEPHONE
- 2nd STAGE CONSTRUCTION

No.	REVISIONS	BY	DATE
2			
1			

Alberta INFRASTRUCTURE

FIGURE F-2.4d

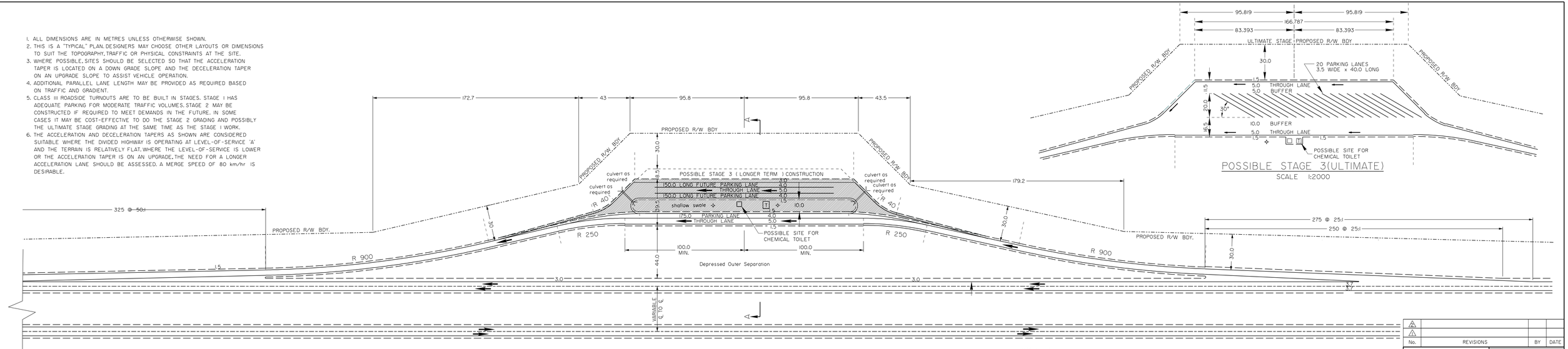
Date: 23 AUGUST 1998

TYPICAL CLASS IIIb (STAGED) ROADSIDE TURNOUT ON DIVIDED HIGHWAYS < 12,000 AADT (Approx)

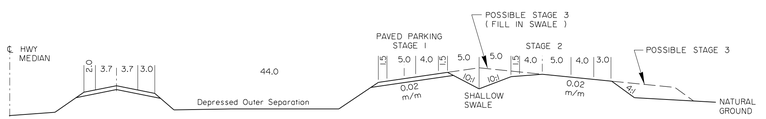
Prepared By: TDN	Checked By: BK	Scale: 1:1500	PAGE F-27

Graphics File: detail2-4d.mon

1. ALL DIMENSIONS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. THIS IS A "TYPICAL" PLAN. DESIGNERS MAY CHOOSE OTHER LAYOUTS OR DIMENSIONS TO SUIT THE TOPOGRAPHY, TRAFFIC OR PHYSICAL CONSTRAINTS AT THE SITE.
3. WHERE POSSIBLE, SITES SHOULD BE SELECTED SO THAT THE ACCELERATION TAPER IS LOCATED ON A DOWN GRADE SLOPE AND THE DECELERATION TAPER ON AN UPGRADE SLOPE TO ASSIST VEHICLE OPERATION.
4. ADDITIONAL PARALLEL LANE LENGTH MAY BE PROVIDED AS REQUIRED BASED ON TRAFFIC AND GRADIENT.
5. CLASS III ROADSIDE TURNOUTS ARE TO BE BUILT IN STAGES. STAGE 1 HAS ADEQUATE PARKING FOR MODERATE TRAFFIC VOLUMES. STAGE 2 MAY BE CONSTRUCTED IF REQUIRED TO MEET DEMANDS IN THE FUTURE. IN SOME CASES IT MAY BE COST-EFFECTIVE TO DO THE STAGE 2 GRADING AND POSSIBLY THE ULTIMATE STAGE GRADING AT THE SAME TIME AS THE STAGE 1 WORK.
6. THE ACCELERATION AND DECELERATION TAPERS AS SHOWN ARE CONSIDERED SUITABLE WHERE THE DIVIDED HIGHWAY IS OPERATING AT LEVEL-OF-SERVICE 'A' AND THE TERRAIN IS RELATIVELY FLAT. WHERE THE LEVEL-OF-SERVICE IS LOWER OR THE ACCELERATION TAPER IS ON AN UPGRADE, THE NEED FOR A LONGER ACCELERATION LANE SHOULD BE ASSESSED. A MERGE SPEED OF 80 km/hr IS DESIRABLE.



POSSIBLE STAGE 3(ULTIMATE)
SCALE 1:2000



TYPICAL CROSS-SECTION A-A
N.T.S.

NOTE:
DESIGNER MAY CHOOSE AN ALTERNATIVE CROSS-SECTION TO BETTER SUIT THE SITE TOPOGRAPHY.

LEGEND
- PROPOSED LIGHTING
- T PROPOSED TELEPHONE
- 2nd STAGE CONSTRUCTION

No.	REVISIONS	BY	DATE
2			
1			

Alberta INFRASTRUCTURE

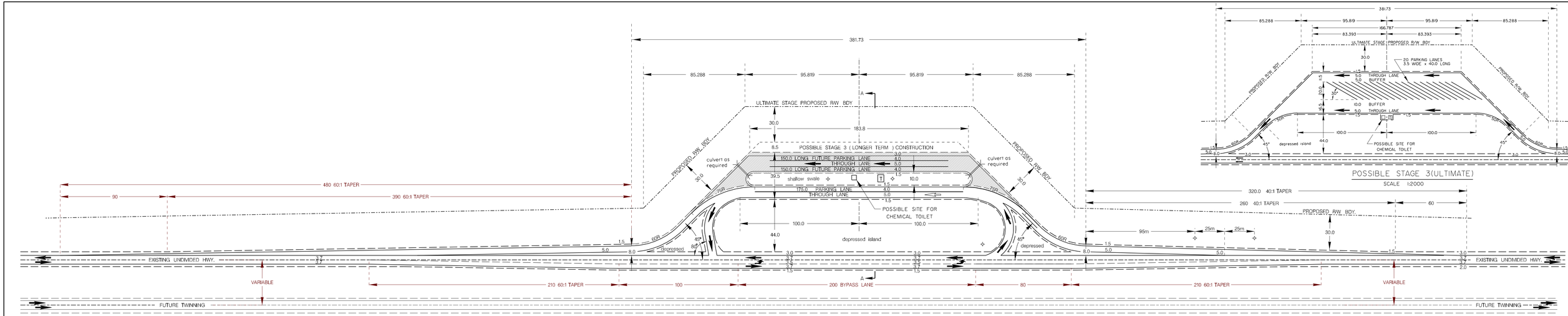
FIGURE F-2.4e

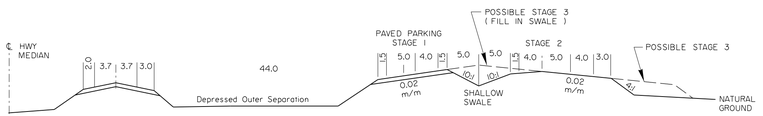
Date: 23 FEBRUARY 1999

TYPICAL CLASS IIIb (STAGED) ROADSIDE TURNOUT ON DIVIDED HIGHWAYS >12,000 AADT (Approx.)

Prepared By: MT	Checked By: BK	Scale: 1:500	PAGE F-29

Graphics File: dsh124e.mon





TYPICAL CROSS-SECTION A-A
N.T.S.

NOTE:
DESIGNER MAY CHOOSE AN ALTERNATIVE CROSS-SECTION TO BETTER SUIT THE SITE TOPOGRAPHY.

NOTE: DESIGN DOES NOT ACCOMMODATE LOG HAUL TRUCKS

LEGEND

- PROPOSED LIGHTING
- T PROPOSED TELEPHONE
- 2nd STAGE CONSTRUCTION

No.	REVISIONS	BY	DATE
2			
1			

Alberta INFRASTRUCTURE

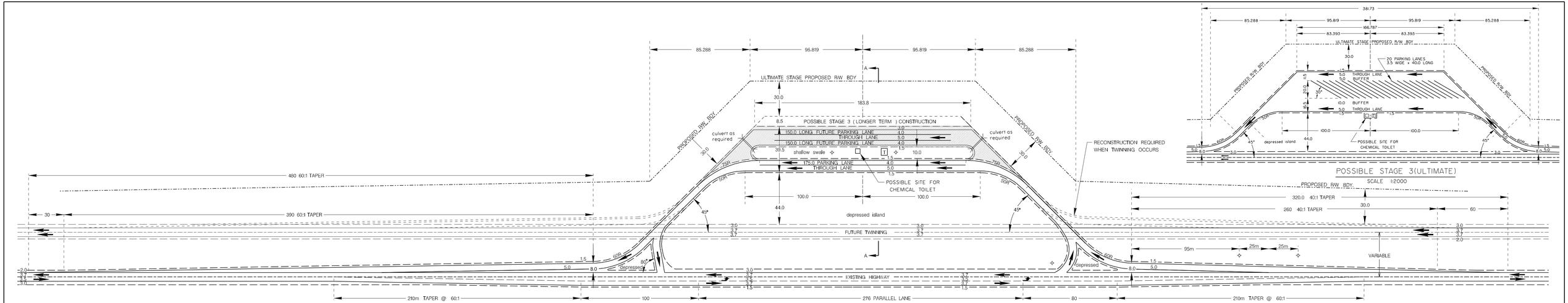
FIGURE F-2.4f

Date: 23 FEBRUARY 1999

TYPICAL CLASS III(b) (STAGED) ROADSIDE TURNOUT ON UNDIVIDED HIGHWAYS Future Twinning on Opposite Side

Prepared By: MT	Checked By: BK	Scale: 1:500	PAGE F-31

Graphics File: desh24e.mon



No.	REVISIONS	BY	DATE

Alberta INFRASTRUCTURE

FIGURE F-2.4g

Date: 23 FEBRUARY 1999

TYPICAL CLASS III(b) (STAGED) ROADSIDE TURNOUT ON UNDIVIDED HIGHWAYS FUTURE TWINNING ON SAME SIDE

Prepared By: MT	Checked By: BK	Scale: 1:500	PAGE F-33

Graphics File: dist124e.man

TYPICAL FRONTAGE ROAD LAY-OUT

FOR SERVICE CENTRES ALONG DIVIDED HIGHWAYS

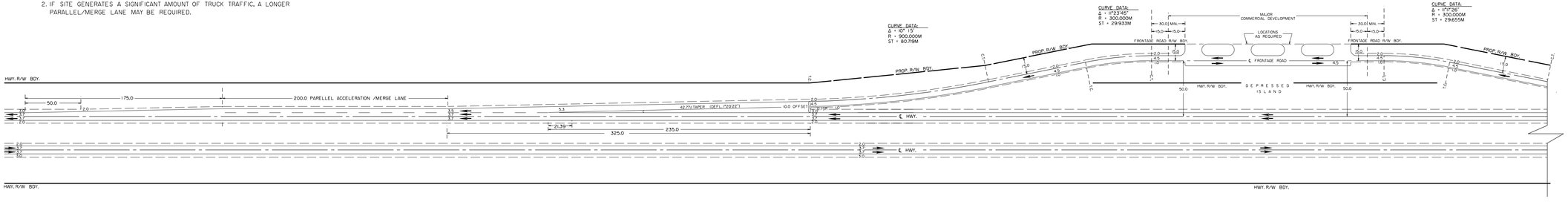
NOTES REGARDING ACCELERATION LANE REQUIREMENTS:

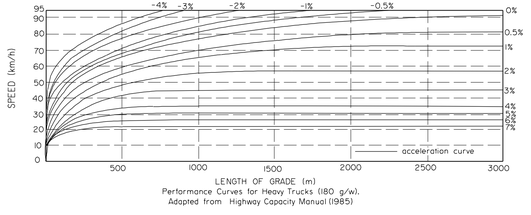
1. GENERALLY, IF THE LEVEL-OF-SERVICE ON THE DIVIDED HIGHWAY IS "A" OR IN THE LOWER HALF OF "B" (THAT IS, UP TO 21,000 AADT ON A TYPICAL RURAL FOUR-LANE DIVIDED FACILITY), THE STANDARD ACCELERATION LANE AS SHOWN IS ADEQUATE. FOR HIGHER VOLUMES AND/OR UPHILL GRADIENTS LONGER ACCELERATION LANES MAY BE USED. A SET OF PERFORMANCE CURVES FOR THE ALBERTA DESIGN TRUCK (180g/w MASS/POWER RATIO) IS PROVIDED TO ENABLE THE DESIGNER TO GAUGE THE IMPACT OF GRADIENTS. A MERGE SPEED OF 80 km/h IS DESIRABLE.

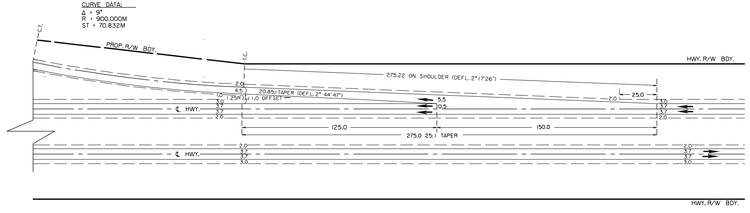
2. IF SITE GENERATES A SIGNIFICANT AMOUNT OF TRUCK TRAFFIC, A LONGER PARALLEL/MERGE LANE MAY BE REQUIRED.

NOTES:

1. DIMENSIONS SHOWN ARE FINISHED SURFACE PAVEMENT WIDTHS. ADDITIONAL SUBGRADE WIDTHS TO BE PROVIDED TO ALLOW FOR DEPTH OF BASE COURSE AND PAVEMENT.
2. ALL CONSTRUCTION WITHIN THE HIGHWAY RIGHT-OF-WAY LIMITS SHALL BE OF AN EQUAL STANDARD TO THAT EMPLOYED IN THE CONSTRUCTION OF THE ADJACENT HIGHWAY WITHIN THE GENERAL MINIMUM SPECIFICATIONS AS FOLLOWS:
   a) EMBANKMENTS SHALL BE CONSTRUCTED OF ACCEPTABLE MATERIAL COMPACTED TO A MINIMUM OF 95% OF STANDARD PROCTOR DENSITY WITH THE EXCEPTION OF THE UPPER 300mm WHICH SHALL BE COMPACTED IN 150mm LAYERS TO A MINIMUM OF 100% OF STANDARD PROCTOR DENSITY.







No.	REVISIONS	BY	DATE
1	REVISED NOTE	BK	AUG/99

Alberta INFRASTRUCTURE

FIGURE F-3

Date: APRIL 1995

MAJOR DEVELOPMENT ACCESS REQUIREMENTS FOR DIVIDED HIGHWAYS

Prepared By: LT	Checked By: BK	Scale: 1:2000	PAGE F-35

Graphics File: del13b.man