TRAFFIC ACCOMMODATION

IN WORK ZONES

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TABLE OF CONTENTS

SECTION I. INTRODUCTION TO TRAFFIC ACCOMMODATION

1. INTRODUCTION 1

2. DEFINITIONS 1

3. PRIMARY RESPONSIBILITIES 3

4. TRAFFIC ACCOMMODATION 7

4.1 GENERAL CONSIDERATIONS 7
4.2 FLAGPERSONS 8
4.3 DETOURS 8
4.4 TEMPORARY SPEED REDUCTIONS 9
4.5 TRANSITIONAL SPEED REDUCTIONS 9
4.6 COORDINATION OF ACTIVITIES 9
4.7 ACCOMMODATING PEDESTRIANS ON URBAN HIGHWAYS 9

5. TRAFFIC ACCOMMODATION STRATEGY (TAS) 9

5.1 GENERAL 9
5.2 DETAILS FOR TRAFFIC ACCOMMODATIONS STRATEGY 10
5.3 ESTABLISHING THE TRAFFIC ACCOMMODATION STRATEGY 11
5.4 MONITORING TRAFFIC ACCOMMODATION 12
5.5 DAILY RECORD OF TRAFFIC CONTROL DEVICES 12

6. COMPLIANCE WITH CONTRACT SPECIFICATIONS AND TRAFFIC ACCOMMODATION STRATEGY ON DEPARTMENT CONSTRUCTION CONTRACTS 13

7. LONG DURATION PROJECTS 14

8. SHORT DURATION PROJECTS 14

9. TRAFFIC CONTROL DEVICES 15

9.1 GENERAL 15
9.1.1 AWARENESS AND IDENTIFICATION 15
9.1.2 PROTECTION 15
9.1.3 CHANGES IN TRAFFIC SPEED 15
9.1.4 LANE DELINEATION 16
9.2 TEMPORARY SIGNING 16
9.3 SIZE OF SIGNS ON URBAN AND RURAL HIGHWAYS 17
9.4 TEMPORARY WARNING SIGNS 17
9.5 REGULATORY SIGNS 18
9.6 INFORMATION (GUIDE) SIGNS 18
9.7 INSTALLATION OF TEMPORARY SIGNS 18
9.8 TYPICAL SIGN TYPES, SEQUENCE AND SPACING 19
9.9 DELINEATORS 19
9.10 TAPERS 19
9.11 SEQUENTIAL ARROWBOARDS AND VARIABLE MESSAGE BOARDS 20
9.12 SPECIALIZED TRAFFIC CONTROL DEVICES 21
9.13 OVERHEAD ILLUMINATION AND FLASHERS 21
9.14 PRECAST CONCRETE F SHAPED BARRIERS 21
9.15 INTERLOCKING CRASH TESTED WATER FILLED BARRIERS 22
9.16 WATER FILLED BARRICADES 22

10. DOUBLE FINES IN WORK ZONES 22

11. STANDARD DRAWINGS FOR URBAN HIGHWAYS 22

12. THE CLEAR ZONE CONCEPT IN WORK ZONES 22
12.1 GENERAL 22
12.1.1 APPLICATION OF THE CLEAR ZONE CONCEPT IN WORK ZONES 23

SECTION II STANDARD DRAWINGS FOR TRAFFIC CONTROL ON RURAL HIGHWAYS
1. LONG DURATION
2. SHORT DURATION
3. TESTING, SURVEY AND OTHER SHORT DURATION ACTIVITIES
4. MISCELLANEOUS ITEMS
5. UTILITIES CONSTRUCTION

SECTION III. STANDARD DRAWINGS FOR TRAFFIC CONTROL ON URBAN HIGHWAYS
1. HIGH SPEED/HIGH VOLUME
2. LOW SPEED/LOW VOLUME

SECTION IV. SAMPLE FORMS
1. DAILY RECORD OF TEMPORARY CONSTRUCTION SIGNING

SECTION V. SIGN SCHEDULE AND SHEETING REQUIREMENTS
1. RURAL HIGHWAYS
2. URBAN HIGHWAYS
3. SHEETING REQUIREMENTS

APPENDIX A
1. TRAFFIC ACCOMMODATION STRATEGY COMPONENT CHECKLIST
2. DRAWING NO. TCS-B-1.28 EXAMPLE OF CLEAR ZONE APPLICATION FOR WORK AREA, TWO LANE UNDIVIDED HIGHWAY (ONE LANE ALTERNATING TRAFFIC)
3. DRAWING NO. TCS-B-1.29 EXAMPLE OF CLEAR ZONE APPLICATION FOR WORK AREA, FOUR LANE DIVIDED HIGHWAY
4. DRAWING NO. CB6 4.2 M16 PRECAST “F” SHAPE TEMPORARY BARRIER
5. DRAWING NO. TEB 3.19 SAND AND BARREL CRASH CUSHION
6. DRAWING NO. TCS-B-8.1 FOUR LANE TO TWO LANE EMERGENCY DETOUR
7. DRAWING NO. TCS-B-8.2 ONE LANE CLOSURE DOUBLE FINE SIGNAGE
8. DRAWING NO. TCS-B-8.3A EMERGENCY AGENCY RESPONSE, ONE LANE CLOSURE TWO LANE UNDIVIDED HIGHWAY
9. DRAWING NO. TCS-B-8.3B EMERGENCY AGENCY RESPONSE, ONE LANE CLOSURE FOUR LANE DIVIDED HIGHWAY
10. DESIGN BULLETIN #6/2002 TYPICAL TRAFFIC CONTROLS FOR HIGHWAY TRANSITIONS

SECTION I

INTRODUCTION TO TRAFFIC ACCOMMODATION

TRAFFIC ACCOMMODATION IN WORK ZONES

1. INTRODUCTION

When activities such as roadway/bridge work, utilities work, or materials testing and surveying are performed on or adjacent to public highways in Alberta, the person(s) performing the work must make suitable provisions to safely accommodate the travelling public.

The purpose of this document is to provide information and minimum standards to the various parties to Alberta Transportation contracts, agreements, permits and authorizations so that the accommodation of traffic is handled in a consistent, safe and effective manner. This document identifies the primary roles and responsibilities of each party for public safety, outlines general considerations for developing an effective traffic accommodation strategy and provides information when using various Traffic Control Devices on both urban and rural highways. Also included are a series of drawings detailing minimum standards for temporary signing in typical Work Zones on Alberta Transportation highways. In the case of non-typical Work Zones, site specific traffic control measures are required to address the unique aspects of the project.

The contents of this document are not intended to modify or supersede any provisions of Alberta Transportation contracts or agreements. In the event of a discrepancy between this document and the Department's contracts or agreements, the requirements of the contract or agreement shall govern.

Users of this manual should note that Section 1.6, Compliance with Contract Specifications and Traffic Accommodation Strategy pertains to Alberta Transportation construction and maintenance projects. Due to the duration and nature of highway maintenance and utility work, the process used to address incidents of non-compliance may differ for those types of projects.

2. DEFINITIONS

For the purposes of this manual, the following definitions apply:

ASDT	Average Summer Daily Traffic (Traffic volume for an ASDT shall include traffic travelling in both directions at a given point.)
Buffer zone	The area from the end of the transition area to the actual work space.
Clear zone	The border area starting at the edge of the travel lane that should be clear of hazards and available for use by errant vehicles.
Consultant	The person(s) retained by the Department to design and/or administer a highway/bridge construction or maintenance contract.

Contractor	The person(s) performing the work on a Department highway/bridge construction or maintenance contract.
Department	Alberta Transportation (AT).
Department Representative	The Department official who liaises with the Contractor, Consultant or Utility Company. On Department construction contracts, this person would typically be the "Project Sponsor". On Department maintenance contracts, this person would typically be the Maintenance Contract Inspector (MCI). For Utility work, this person would typically be the Development Planning Technologist.
Gazetted Highway Speed	The original highway speed
High Speed, High Volume Highways	Urban highways on which the gazetted speed is greater than 60 km/hour and the ASDT exceeds 10,000 vehicles per day.
Long Duration Projects	Projects such as the construction of a new roadway or bridge, the reconstruction or resurfacing of an existing roadway and other similar types of work which last longer than a single day.
Low Speed, Low Volume Highways	Urban highways on which the gazetted speed is 60 km/hour or less and the ASDT is 10,000 vehicles or less per day.
Mobile Work Zone	Work Zones that involve work that is performed while moving continuously, usually at low speeds, or intermittently, with periodic stops which do not exceed a few minutes in duration.
Rural Highway	Any highway under the jurisdiction of Alberta Transportation located outside the corporate boundaries of an urban municipality.
Short Duration Projects	Projects which involve activities for which the traffic disruption lasts no more than a single day and is not undertaken during hours of darkness.
Specifications	The latest editions of Alberta Transportation's Standard Specifications for Highway Construction, Specifications for Bridge Construction or Highway Maintenance Specifications.
Traffic Accommodation Strategy (TAS)	Plans and written procedures detailing the traffic accommodation activities for any work within the highway right-of-way.

Traffic Control Devices (TCDs)	Temporary signing, traffic control signals, arrowboards, pavement markings, delineators, message boards, etc., used for traffic accommodation in the Work Zone.
Urban Highway	Any highway under the jurisdiction of Alberta Transportation located within the corporate boundaries of a municipality.
Utility Company	The person(s) installing, adjusting, maintaining or relocating a utility within the highway right-of-way.
Work Area	The area or location of the actual traffic disruption or hazard. There may be several Work Areas within the Work Zone.
Work Zone	The area extending from the first advance warning sign to the last construction sign**.**

3. PRIMARY RESPONSIBILITIES

To ensure traffic accommodation is handled in a consistent, safe and effective manner, it is critical that all parties to Alberta Transportation's contracts, agreements, permits and authorizations carry out their respective responsibilities concerning traffic accommodation.

The primary responsibilities of the Contractor, Consultant, Utility Company, Municipality and the Department for traffic accommodation are as follows:

A. Contractor

The following are the Contractor's primary responsibilities for traffic accommodation on Department highway/bridge construction and maintenance contracts.

On construction projects, any required submissions or reporting by the Contractor shall be directed to the Consultant. On maintenance projects, any required submissions or reporting by the Contractor shall be directed to the Department Representative.

- Develop a Traffic Accommodation Strategy and submit it for evaluation prior to commencement of the work.
- Implement traffic accommodation measures in accordance with the Traffic Accommodation Strategy.
- Ensure that all sub-contractors comply with the Traffic Accommodation Strategy.
- Monitor the Work Zone to ensure that the Traffic Accommodation Strategy is effective. This requirement is applicable during hours of daylight and darkness and regardless of whether or not work is being performed or the project is shut down.
- Maintain all Traffic Control Devices.
- Modify the Traffic Accommodation Strategy as necessary.

- Take appropriate and timely action to correct any deficiencies identified by the Contractor, the Consultant or the Department. In cases of imminent danger, corrective action must be immediate.
- Report all third party vehicle accidents immediately. Provide a copy of the completed accident report within 72 hours of the occurrence.
- On construction projects, submit completed daily reports of traffic accommodation details (location, date, time, signs, barricades, etc.) on a weekly basis.
- On construction projects, attend any meetings initiated by the Consultant to address any concerns regarding the performance of the Traffic Accommodation Strategy.
- On construction projects, submit a timely and accurate schedule of the sub-contractors activities prior to commencement of the work.
- Provide a knowledgeable individual at the Work Zone to maintain the Traffic Control Devices and address any traffic accommodation issues which arise. On construction projects, the Contractor must identify this individual at the pre-construction meeting.

B. Consultant

The following are the Consultant's primary responsibilities for traffic accommodation when administering a Department highway or bridge construction contract.

When a Consultant performs work such as survey and materials testing within the highway right-of-way which does not coincide with the Contractor's activities, the primary responsibilities of the Contractor shall also apply to the Consultant.

- Identify in the special provisions of a construction contract, any unique situations that will require special traffic accommodation measures. Ensure the Contractor addresses these situations in the Traffic Accommodation Strategy (eg. limiting the length of the Work Zone, establishing the posted speed for the Work Zone, etc.).
- Where applicable, confirm “traffic counts” with the Department Representative and include this information in the special provisions for the contract (several drawings contained in this document require additional Traffic Control Devices for certain traffic volumes).
- Where applicable, confirm requirements for overhead illumination and minimum speeds for the Work Zone/Area (other than flagperson stations) with the Department Representative and include any requirements in the special provisions for the contract.
- Provide suitable traffic accommodation for the Consultant's activities and coordinate the positioning of the Consultant's Traffic Control Devices with the Contractor and/or Utility Company when necessary.
- Review the Contractor’s Traffic Accommodation Strategy prior to commencement of the work to determine if it is appropriate for the site conditions anticipated.
- Provide a copy of the Contractor’s Traffic Accommodation Strategy to the Department Representative.
- Liaise with the Contractor to address any concerns with the proposed Traffic Accommodation Strategy.

- Notify the local RCMP of the proposed changes to traffic flow. Invite the RCMP to review traffic flows, signage and any other Traffic Control Devices upon commencement of the work.
- Where applicable, notify local fire department and ambulance service of the impending work and anticipated site conditions.
- Provide the Department Representative with a completed "Order Fixing Maximum Speed Limits" prior to commencement of the work.
- Periodically monitor the Work Zone to ensure the Contractor implements and maintains the Traffic Accommodation Strategy.
- Monitor the Work Zone as the Consultant deems necessary and as the work progresses to determine if the Traffic Accommodation Strategy is suitable for each phase of the work and throughout the duration of the project.
- Initiate any meetings required with the Contractor to address any concerns regarding the performance of the Traffic Accommodation Strategy.
- Advise the Contractor of any deficiencies in his traffic accommodation measures and ensure that the Contractor takes appropriate and timely corrective action.
- Order the Contractor to suspend work in cases of recognized imminent danger or where the Contractor fails to undertake appropriate and timely measures to accommodate traffic or fails to correct recurring deficiencies. Immediately notify the Department Representative in cases where such orders are issued.
- Immediately notify the Department Representative of any accidents which involve a fatality, serious personal injury, or 3rd party property damage in excess of $1,000 or as specified in the Motor Vehicle Administration Act or any act or regulation that replaces the Motor Vehicle Administration Act Provisions. Provide the Department Representative with a Motor Vehicle Traffic Collisions Occurring in Work Zones Report within 72 hours of knowledge of the accident. (Report to include photos, details of site conditions, record of signs, etc.)
- Review all daily traffic reports received from the Contractor.

C. Utility Company

- When performing work in conjunction with a Department construction contract and inside the Contractor's Work Zone, provide suitable Traffic Control Devices for the utility work and co-ordinate the positioning of these devices with the Contractor and Consultant.
- When performing work which is not inside the Contractor's Work Zone, develop a Traffic Accommodation Strategy and submit it to the Department Representative for evaluation at least 2 weeks prior to commencement of the work.
- Provide a knowledgeable individual at the utility Work Area to maintain the Traffic Control Devices and address any traffic issues which arise. Identify this individual to the Department Representative prior to commencement of the work.
- Implement traffic accommodation measures in accordance with Traffic Accommodation Strategy.
- Monitor the utility Work Area to ensure the Traffic Accommodation Strategy is effective. Modify the Strategy when necessary and advise the Department Representative accordingly.

- Maintain all Traffic Control Devices.
- Take appropriate and timely action to correct any deficiencies.
- Ensure that all sub-contractors working for the Utility Company comply with the Traffic Accommodation Strategy.
- Report all third party vehicle accidents to the Department Representative immediately. Provide a copy of the completed accident report within 72 hours of the occurrence.

D. Department

The Department establishes standards for the specifications and drawings and ensures that public safety is a high priority on Department construction and maintenance contracts and utility work. In addition, the Department performs the following functions:

i) On projects where the Department has retained a Consultant

- At the design stage of the project, provide the Consultant with comments regarding the proposed traffic accommodation procedures and assist in the identification of issues that are unique to the project.
- Provide comments to the Consultant concerning the Contractor's proposed Traffic Accommodation Strategy.
- May periodically visit the Work Zone. During such visits, advise the Consultant of any deficiencies noted in the traffic accommodation measures.
- Order the Contractor to suspend work in cases of recognized imminent danger or where the Contractor fails to take appropriate and timely measures to accommodate traffic. Typically, the Department would only take on this responsibility during a "periodic visit" where the Consultant cannot be contacted to issue the order to suspend work.
- Review Motor Vehicle Traffic Collisions Occurring in Work Zones reports for completeness and report any traffic accommodation signing deficiencies noted to the Consultant so that they can be corrected immediately.

ii) On projects where the Department has not retained a Consultant

- Review the Traffic Accommodation Strategy prior to commencement of the work to determine if it is appropriate for the site conditions anticipated.
- Liaise with the person performing the work to address any concerns with the proposed Traffic Accommodation Strategy.
- Periodically monitor the Work Zone to ensure the person performing the work implements and maintains the Traffic Accommodation Strategy.
- Monitor the Work Zone as the Department deems necessary and as the work progresses to determine if the Traffic Accommodation Strategy is suitable for each phase of the work throughout the duration of the project.
- Initiate any meetings required with the Contractor to address any concerns regarding the performance of the Traffic Accommodation Strategy.

- Advise the person performing the work of any deficiencies in his traffic accommodation measures and ensure that the Contractor takes appropriate and timely corrective action.
- Order the person performing the work to suspend work in cases of recognized imminent danger or where he fails to undertake appropriate and timely measures to accommodate traffic or fails to correct recurring deficiencies. Immediately notify the Department Representatives in cases where such orders are issued.
- For any accidents, which involve a fatality, serious injury, or 3rd party property damage in excess of $1,000 or as specified in the Motor Vehicle Administration Act, or any act or regulation that replaces the Motor Vehicle Administration Act Provisions, complete a Motor Vehicle Traffic Collisions Occurring in Work Zones Report within 72 hours of knowledge of the accident. (Report to include photos, details of site conditions, record of signs, etc.)

E. Municipality

The following are the municipality's primary responsibilities for traffic accommodation when undertaking work on provincial highways.

- Develop a Traffic Accommodation Strategy and submit it to the Department Representative for evaluation 2 weeks prior to the commencement of work.
- Provide a knowledgeable individual at the work area to maintain the traffic control devices and address any traffic issues that may arise. Identify this individual to the department representative prior to commencing work.
- Implement traffic accommodation measures in accordance with the Traffic Accommodation Strategy.
- Monitor the work area to ensure the Traffic Accommodation Strategy is effective.
- Modify the strategy when necessary and advise the department representative accordingly, in writing.
- Maintain all traffic control devices.
- Take appropriate and timely action to correct any deficiencies.
- Ensure that all contractors working for the municipality comply with the Traffic Accommodation Strategy.
- Report all third party vehicle accidents to the department representative immediately.

4. TRAFFIC ACCOMMODATION

4.1 GENERAL CONSIDERATIONS

In addition to providing safe passage for traffic through the Work Zone, effective traffic accommodation involves minimizing inconvenience to traffic. To ensure traffic moves effectively through the Work Zone, it is critical that the Traffic Control Devices (TCDs) used to advise, warn and direct traffic are appropriate for the site conditions. Any TCDs which are not required must be removed or covered immediately.

In all cases, any required TCDs, flagpersons and detours must be in place prior to the commencement of the work. In addition, the required minimum lane width must be maintained at all times.

4.2 FLAGPERSONS

In situations where the sole use of TCDs does not provide sufficient warning or direction to traffic, the use of flagpersons may be required. The proper use of flagpersons to control and direct the flow of traffic can mitigate problems inherent in congested Work Areas and in Work Areas involving reduced lane widths and lane closures. When traffic queues occur, additional flagpersons and/or repositioning of the "Flagperson Ahead" sign may be necessary.

All flagpersons must be certified. Flagpersons shall be dressed in coveralls which meet the Class 3 Level 2 requirements of CSA Z96-02, High Visibility Safety Apparel. Each pair of coveralls shall have a permanent label affixed certifying compliance with Class 3 Level 2 of CSA Z96-02.

The colour of the coveralls shall be fluorescent yellow-green with silver retroreflective striping. The retroreflective striping shall be a minimum of 50mm wide, and shall be sewn onto a 100mm wide fluorescent red-orange background material. Flagperson safety apparel shall be kept clean and in good condition at all times. Faded, torn and/or dirty coveralls, or coveralls without CSA certification labels, will not be acceptable, and shall be replaced.

Prior to commencement of the Work, the Contractor shall identify and assess existing and potential hazards at the project site. Where there is a foreseeable risk of injury to a worker's head, flagperson's shall wear fluorescent orange protective hardhats meeting the requirements of CSA Standard Z94.1-92. Where no foreseeable risk of head injury exists, flagpersons will be permitted to wear any type of fluorescent orange headgear.

During hours of darkness, flagpersons shall be equipped with hand held red traffic signal wands of sufficient brightness to be clearly visible to approaching traffic. In addition, flagging stations shall be illuminated by overhead lighting; and signs indicating hazardous conditions and signs requiring increased attention shall be marked with flashers.

4.3 DETOURS

In situations where it is necessary to close the entire roadway, a detour must be provided. The scheduling, location and use of a detour requires prior approval of the Department and/or other jurisdictions.

Where the conditions dictate that construction of a detour is necessary, the Contractor shall design the detour in accordance with the temporary highway detour geometric guidelines contained in the latest edition of the Department manual entitled Highway Geometric Design Guide and also the standard drawings contained in this document

4.4 TEMPORARY SPEED REDUCTIONS

When work is performed within the highway right-of-way on Department contracts or agreements, the Department has the authority, under the Traffic Safety Act, to authorize temporary speed reductions in the Work Zones.

On Long Duration Projects, local authorities are made aware of the temporary speed reduction through the issuance of the "Order Fixing Maximum Speed" form.

On Short Duration Projects, the form is not required.

4.5 TRANSITIONAL SPEED REDUCTIONS

The standard drawings included in this document do not show incremental speed reductions in advance of the Work Zone. On high speed/high volume urban highways, where the gazetted highway speed in advance of the Work Zone is greater than 30 km/hr above the posted speed in the Work Zone, the speed approaching the Work Zone shall be reduced incrementally over a reasonable transition distance.

4.6 COORDINATION OF ACTIVITIES

On Department construction projects, it is not uncommon to have the Contractor, Consultant, and/or Utility Company simultaneously performing work within the Contractor's Work Zone. In these situations, it is important that traffic accommodation is a coordinated effort between all parties and that the positioning of Traffic Control Devices required for each activity is established prior to commencement of the work.

4.7 ACCOMMODATING PEDESTRIANS ON URBAN HIGHWAYS

Pedestrians shall be provided with safe passage through or around Work Areas on urban highways. When passage is provided through the Work Area, suitable provisions shall be made to ensure pedestrians are physically separated from workers and equipment. When pedestrian traffic cannot be accommodated through the Work Area, an alternate route shall be made available.

5. TRAFFIC ACCOMMODATION STRATEGY

5.1 GENERAL

When activities are performed within the highway right-of-way, a Traffic Accommodation Strategy is required. To be effective, the Traffic Accommodation Strategy must address the traffic accommodation issues relevant to the specific activity being performed, provide protection for workers and equipment within the Work Area and allow traffic to pass safely and with a minimum of inconvenience through or around the Work Zone.

For work performed by a Contractor on a Department construction or highway maintenance contract, the Traffic Accommodation Strategy shall be developed by the Contractor.

For work performed by a Utility Company (outside the limits of the Contractor's Work Zone), a Traffic Accommodation Strategy shall be developed by the Utility Company.

For work performed by a Consultant (outside the limits of the Contractor's Work Zone), a Traffic Accommodation Strategy shall be developed by the Consultant.

On construction contracts, the Contractor must submit the Traffic Accommodation Strategy to the Consultant prior to commencement of the work. The Consultant will then review the Traffic Accommodation Strategy and address any concerns with the Contractor. The timelines for the submission and review of the Traffic Accommodation Strategy are detailed in the Specifications.

On highway maintenance contracts, Traffic Accommodation Strategies for "planned" maintenance activities shall be submitted by the Contractor to the Department Representative for review prior to commencement of the work and in accordance with the Specifications.

For "non-planned" maintenance activities or emergency situations it may not be practical to develop a site-specific Traffic Accommodation Strategy. For these cases, typical or generic strategy(s) which generally cover the activities or situations anticipated may be used. These "generic" strategies must also be in place prior to commencement of the work.

When a Traffic Accommodation Strategy for work performed by a Consultant, Municipality or Utility Company is required, the Consultant, Municipality or Utility Company shall submit the strategy within the timelines established by the Department Representative.

To achieve consistency in the accommodation of traffic on Department projects, the information and standard drawings contained in this document must always be considered when developing or evaluating a Traffic Accommodation Strategy. The information and standard drawings contain minimum standards for typical conditions. However, the actual requirements for traffic accommodation may vary depending on the complexity of the work activity, traffic volumes, traffic speeds, night time conditions, highway geometrics and other site specific conditions.

5.2 DETAILS OF THE TRAFFIC ACCOMMODATION STRATEGY

The objective of a Traffic Accommodation Strategy is to safely accommodate both the road users passing through the Work Zone and the workers performing activities within the Work Zone. The complexity of the Traffic Accommodation Strategy will vary depending upon a number of factors including traffic volumes and the nature of the activity being performed. Typically, traffic accommodation measures required for Long Duration Projects will be more elaborate than those for Short Duration Projects.

Regardless of the nature of the activity, the following factors should be considered when developing the Traffic Accommodation Strategy (A check list is included in Appendix A):

- Duration of work.
- Traffic volumes (ASDT, peak hours, statutory holidays, special events and recreation traffic, etc.).

- Class of roadway (capacity, level of service, etc.).
- Available sight distance.
- Intersecting roadways.
- Gradeline (steep hills create stopping problem).
- Type of roadway surface (gravel or paved).
- The use of only those Traffic Control Devices which are necessary to clearly warn, advise and control the traffic.
- Speed limits must be appropriate for the conditions. When reductions in speed are necessary, the speed must be reduced over a reasonable distance.
- The provision of a buffer between traffic and workers whenever possible.
- Devices used to delineate the travel lanes must be appropriate for the intended purpose. Such devices must be visible to traffic and positioned and spaced in a manner which will optimize their effectiveness.
- Stabilizing Traffic Control Devices with weights when necessary.
- Closing only those lanes necessary to divert traffic around workers and/or equipment.
- The use of flags and/or flashers to increase the visibility or prominence of signs.
- The use of flagpersons for traffic control.
- The effect of restricted traffic flow on "upstream" conditions (traffic congestion, etc.).
- Avoid scheduling operations during hours of peak traffic volumes.
- The requirements as illustrated on the standard drawings included in this document pertaining to the use and location of tapers and transitions.
- Weather conditions (dust, rain or snow).
- Site specific safety issues.

5.3 ESTABLISHING THE TRAFFIC ACCOMMODATION STRATEGY

It is extremely important that all parties have a clear understanding of how traffic will be accommodated before work commences. This information must be detailed in the Traffic Accommodation Strategy.

The Traffic Accommodation Strategy must contain drawings detailing the configuration of temporary signing and any other Traffic Control Devices which will be used to accommodate traffic. For typical situations, the standard drawings contained in this document may be used. For non-typical situations, site specific or activity specific drawings must be developed by the person performing the work.

The Traffic Accommodation Strategy must also document procedures which will be used to address issues such as but not limited to the following:

- Installing, relocating and removing Traffic Control Devices.
- Accommodating over-dimensional vehicles.
- Accommodating vehicles around fresh tack coat.
- Night time and other periods of inactivity.

- Use of detours.
- Accommodating emergency vehicles.
- The use of non-typical lane widths.
- The on-site designate responsible for traffic accommodation.
- Any non-typical situations not covered by the standard drawings.

It is critical that all parties are in agreement on the procedures, signing configurations, and Traffic Control Devices to be used for the accommodation of traffic prior to commencement of the work. Once work commences, changes can be made as conditions dictate. Any change made to the Traffic Accommodation Strategy including the reasons or circumstances necessitating the change must be documented in writing.

5.4 MONITORING TRAFFIC ACCOMMODATION

To ensure traffic control measures are performing as intended, it is necessary to monitor and maintain the Traffic Control Devices on a regular basis. The person performing the work designates a specific individual to perform this function and ensure any issues arising are addressed in a consistent and timely manner. To be effective in this role, such individuals must be knowledgeable in the processes and procedures for accommodating traffic including the use of all types of Traffic Control Devices.

5.5 DAILY RECORD OF TRAFFIC CONTROL DEVICES

The person performing the work must document specific information concerning the temporary construction signing and any other Traffic Control Devices used to accommodate traffic through the Work Zone. This information is recorded each day, from the date that work zone signs are installed until they are removed and as the work area changes. A sample form is included in this document. The person performing the work may develop and use his own form provided it clearly contains all the information shown on the sample form.

Information to be recorded includes the following:

- Project description.
- Date and time the Traffic Control Devices were inspected by the Contractor.
- Station number of the beginning of each Work Area.
- Designation and location (station number) of the temporary construction sign immediately prior to each Work Area.
- "Reference number" of the signing drawing which reflects the temporary construction signing existing at the time of the inspection. Typically, the drawing referenced will be one which forms part of the Traffic Accommodation Strategy.
- Any significant issues concerning the signing, including any variations between the actual signing and that which is shown on the signing drawing. This information should be noted in the "comments" section of the form.

As a minimum, all signing must be inspected and the information recorded at both the commencement and end of work each day and also at any other times throughout the day when signs are moved or changed.

Recording this information does not relieve the person performing the work of his responsibility to ensure that the traffic accommodation activities comply with the Traffic Accommodation Strategy at all times during the project.

6. COMPLIANCE WITH CONTRACT SPECIFICATIONS AND TRAFFIC ACCOMMODATION STRATEGY ON DEPARTMENT CONSTRUCTION CONTRACTS

It is the Department's expectation that the Contractor complies with the Specifications for traffic accommodation and the Traffic Accommodation Strategy at all times throughout the duration of the project. In situations where the Contractor is not in compliance with these requirements, the Consultant has the authority to order the Contractor to suspend work on the project. Although ordering the immediate suspension of work will ultimately achieve compliance with the Specifications, it may not be practical or desirable to take this course of action in all cases. Therefore, to ensure proper administration of this authority the Consultant must exercise good judgement in each case.

In a situation where there is recognized imminent danger to road users, the suspension of work must be immediate and must continue until the Contractor has rectified the deficiency to the satisfaction of the Consultant.

When an infraction or deficiency is considered to be minor and does not result in imminent danger, an escalating resolution process should be used.

In these cases, the Consultant’s first attempt to have the issue resolved should be through verbal communication with the Contractor. At this stage, it may be beneficial for the Consultant to meet with the Contractor, identify or explain the nature of the deficiency, confirm expectations and discuss possible solutions to help prevent a reoccurrence of the deficiency.

If the infraction or some similar type of deficiency reoccurs, the Consultant must issue a written warning, advising the Contractor that continued infractions will result in the issuance of an order to suspend work on the project. A copy of this written warning must be forwarded to the Contractor’s head office and the Project Sponsor. At this point the Contractor should examine his existing methods or processes for accommodating traffic and consider making modifications which will prevent reoccurring infractions and ensure compliance with the Specifications. The nature of the methods or processes required to ensure compliance with the Specifications is totally the responsibility of the Contractor.

If after the issuance of a written warning infractions continue to occur, the Consultant must issue the Contractor with a written order to suspend work on the project. At this point, the Project Sponsor must be notified of the conditions at the Work Zone and the Contractor's failure to comply with the contract requirements.

When a written order to suspend work is issued, the “order” may cover a specific phase of the work (being performed by a sub-contractor) or the entire project, as actual conditions dictate. In all cases, the Contractor is totally accountable for the performance of his sub-contractors.

The written order to suspend work remains in effect until the Contractor rectifies the deficiency. Further, when an order to suspend work has been issued, it is recommended that the Consultant arrange a meeting between himself, the Project Sponsor, and senior official of the Contractor to discuss the problems associated with traffic accommodation on the project and to establish measures which will prevent future occurrences of non-compliance.

It is the Department's intent and expectation that in all cases, deficiencies in traffic accommodation are addressed in a prompt and effective manner. Therefore, this escalating resolution process may culminate over a period of days or within a single day, depending on the nature of the deficiency.

Repeated non-compliance by Contractors on previous Department projects may require that alternative measures be used to ensure effective traffic accommodation. In these cases, the Project Sponsor should confirm expectations and the manner in which non-compliance will be handled with the Consultant and the Contractor prior to commencement of the work.

7. LONG DURATION PROJECTS

Due to the varying duration and site conditions and the complexity of these types of projects, a specific Traffic Accommodation Strategy is required in each instance. When developing a Traffic Accommodation Strategy for a Long Duration Project, the following additional factors must be considered:

- Type of activity (mobile versus stationary).
- Other work planned adjacent to or within the project limits.
- Railway crossings.
- Maintaining traffic control during periods of inactivity (off-hours, downtime, seasonal shutdown, etc.).
- Bridge sites.
- Nightime operations

8. SHORT DURATION PROJECTS

Short Duration projects generally involve activities necessary to preserve or repair existing highways and bridges, to perform testing on existing roadway surfaces or to perform survey measurements within the highway right-of-way. Due to the nature of these activities, the work may be performed in accordance with a scheduled plan similar to Long Duration projects or, on an emergency (unscheduled) basis. Short Duration projects may have mobile or stationary Work Areas and may involve work on the highway travel lanes, the highway shoulders, in the highway right-of-way and on or around drainage facilities.

9. TRAFFIC CONTROL DEVICES

9.1 GENERAL

To be effective, Traffic Control Devices must achieve the following:

9.1.1 AWARENESS AND IDENTIFICATION

- Advise road users of the type of activity and the potential hazards that they may encounter.
- Divert traffic from its normal path when necessary.
- Advise road users when it is safe to resume normal speed.

9.1.2 PROTECTION

- Protect road users and workers from collisions by providing adequate warning and/or a barrier. Where access to a road is being denied to the public, barricades shall be installed across the entire surface of the roadway.

9.1.3 CHANGES IN TRAFFIC SPEEDS

- Generally at locations where the work results in a change to the existing road conditions (i.e. lane transitions, reduced lane widths, detours, etc.), creates obstructions or requires the presence of workers/equipment in or adjacent to the normal path of travel, a reduced speed zone is warranted. Speeds shall be appropriate for accommodating traffic safely through or around the Work Zone with a minimum of inconvenience.
- Generally, the reduced work zone speeds are as noted in the following tables.

TWO LANE HIGHWAYS

Speed Limits			Description
50	80	100	
X			▪ Traffic is controlled by flagpersons or traffic lights ▪ The whole roadway is disrupted with construction or maintenance activities ▪ Working on the paved shoulder and encroaching on a travel lane ▪ Shoulder width less than 1m with an unprotected longitudinal drop off
	X		▪ On paving projects with uneven mat up to 65 mm in thickness ▪ On paving projects where the center line has been spotted ▪ Shoulder width more than 1 m with an unprotected longitudinal drop off ▪ Work area separated by F-shaped concrete barrier system or approved equivalent installed on the road surface
		X	▪ Very short duration work; e.g. sign replacement, “Splash and dash” patching, debris removal, etc. and equipment is parked entirely on the shoulder ▪ All work is outside of the paved shoulder; working from the ditch side, mowing, surveying, etc. ▪ No changes done to the driving lanes or paved shoulders ▪ Work area separated by F-shaped concrete barrier system or approved equivalent installed off the road surface

MULTI-LANE HIGHWAYS

Speed Limits				Description
50	80	100	110	
X				▪ For emergency detours due to accidents, alignments, obstructions, below design standard. ▪ If all traffic must be stopped due to road closures
	X			▪ Any activity when a lane has been closed and separated by traffic delineators, traffic barrels, barricades, etc. ▪ Any work activity on a paved shoulder ▪ Shoulder width less than 1 m with an unprotected longitudinal drop off
		X		▪ On paving projects with an uneven mat up to 65 mm in thickness ▪ On paving projects where the center line has been spotted ▪ Shoulder width more than 1 m with an unprotected longitudinal drop off ▪ Work area separated by F-shaped concrete barrier system or approved equivalent installed on the road surface
			X	▪ All work is off the pavement and the unprotected drop off is less than 300mm ▪ No lane encroachment if work is of very short duration; e.g. sign replacement ▪ Work area separated by F-shaped concrete barrier system or approved equivalent installed off the road surface

Note: If there are circumstances where the work zone speeds are different from those noted above, they will be dealt with in the Special Provisions or by the Department Engineer.

9.1.4 LANE DELINEATION

- Provide adequate transitions for the speed and volume of the traffic travelling through the Work Zone.

9.2 TEMPORARY SIGNING

The various types of temporary signing generally used include temporary warning signs, temporary regulatory signs and information signs. Temporary signs must conform to the specifications for shape, color, reflectivity**,** message and size. The type, configuration and number of temporary signs required for the Work Zone may vary depending on the nature of the activity and site conditions.

The following factors should be considered when establishing temporary signing:

- Changes to the Work Zone which temporarily or permanently affect signing requirements (covering or removing unnecessary signs, adding additional signs or moving signs).
- Positioning of the signs relative to the travel lane (distance from and height above the travel lane).
- Visibility of the signs (sight distance, vegetation, parked equipment, darkness, dust, etc., which may reduce effectiveness of the signs).
- Signing is required for both sides (in same direction) on multi-lane divided highways.
- Positioning of signs relative to the Work Area.
- Higher speeds require longer spacing between signs.

- The distance between the "reduced speed" sign and the start of the Work Area. This distance will depend on the reduced speed posted. To be effective, the speed and distance used must allow traffic sufficient time to react without creating undue inconvenience.
- The installation of signs on 2 lane highways with a message displayed to opposing traffic is not allowed**.**

Once all necessary temporary signs are in place and traffic is passing through the Work Zone, it is extremely important to monitor the Work Zone on a regular basis to ensure that:

- The signing is performing as intended.
- Maintenance of signs is completed in a timely fashion. (replacing damaged signs, repositioning signs, cleaning signs, re-erecting fallen signs, etc.)
- The signing continues to reflect and address the current site conditions.

9.3 SIZE OF SIGNS ON URBAN AND RURAL HIGHWAYS

The sizes of the various signs are as shown on the Urban and Rural Sign Schedules included in this manual.

High speed multilane urban highways typically handle large volumes of traffic. In these situations, standard sized signs would not normally be effective. Therefore, on multilane urban highways where the original gazetted speed is greater than 60 km/hr and the Average Summer Daily Traffic volume (ASDT) exceeds 10,000 vehicles per day, oversize signs are required. On rural highways, standard sized signs are normally sufficient.

On Long Duration Projects, the initial sign "Construction Ahead" / "Bridge Construction Ahead/Bridge Construction 3 km" shall be 120 cm x 120 cm.

9.4 TEMPORARY WARNING SIGNS

Temporary warning signs are used to notify road users of specific hazards that may be encountered in the Work Area. If road users are properly alerted to the changing conditions, they can react in sufficient time to pass safely through the Work Zone.

Some examples of temporary warning signs are:

- Road Work
- Flag person
- Survey Crew
- Uneven mat
- Begin Detour 300 m

9.5 REGULATORY SIGNS

Regulatory signs impose legal obligations on all traffic. For example, temporary intersections or intersections having temporarily altered traffic patterns, may require stop signs.

Some examples of temporary regulatory signs are:

- One-Way Traffic
- Two-Way Traffic
- Do Not Pass
- Maximum Speed Ahead

9.6 INFORMATION (GUIDE) SIGNS

In certain situations, it may be desirable to use information signs to supplement the warning and regulatory signs. For example, detour guide signs and route markers are used to direct traffic to alternate routes, even though the Work Zone is not closed to traffic.

9.7 INSTALLATION OF TEMPORARY SIGNS

Temporary signs must be erected such that the face of the sign is clearly visible to oncoming traffic. On 2-lane undivided highways, the signs must be located on the right hand side of the road. On multilane divided highways, signs must be installed on both the shoulder side and the median side of the highway. Special brackets**,** if required**,** need to be fabricated for installing signs on a concrete median

Temporary signs may be mounted on posts or on portable stands. Generally, posts are used on Long Duration projects where the Work Area is stationary. The use of portable stands is better suited for situations where the Work Area is mobile or where the duration of work is relatively short. If traffic control is required over night, signs shall be installed on posts or acceptable industry standard sign stands.

The position and height of all signs relative to the roadway surface must conform with the Specifications. On Long Duration Projects the height of the sign relative to the roadway is 1.5 meters. On Short Duration Projects a 0.3 meter height is necessary. The posts and portable stands on which the signs are installed and any objects used to stabilize the portable stands must be an accepted industry standard and must not present a hazard to traffic.

In situations where it is necessary to make specific temporary signs more prominent, attaching flags and/or flashers may be appropriate.

9.8 SIGN TYPES, SEQUENCE AND SPACING FOR TYPICAL SITUATIONS

For typical situations, the types and sequence of the signs used for traffic accommodation shall be as shown on the standard drawings included in this document. Additional signs may be required in non typical situations.

The spacing between each sign must be of a sufficient distance to allow travellers to react to the sign message before reaching the next sign or traffic control device. The optimal sign spacing will vary depending on the posted speed for the Work Zone and will generally range from 25m to 150m.

Sign spacing for urban and rural highways are identified on the standard drawings**.**

9.9 DELINEATORS

Delineators are used to outline lane transitions and indicate the intended path for road users passing through the Work Area and for separating the traffic lanes from the Work Areas. Effective delineation can be achieved through the use of chevrons, traffic barrels/drums, traffic cones (including tubular delineators) or other similar devices. Delineators are not to be used without the appropriate advance warning signage.

To be effective, delineators must be reflectorized and the proper size. When traffic cones are used, the size required is dependant on traffic speed. Where the speed in the Work Area is greater than 50 km/hr, traffic cones must be a minimum of 70 cm in height. Where the speed in the Work Area is 50 km/hr or less, the height of the traffic cones may be a minimum of 45 cm.

Typical situations where delineators are used:

- Lane closure
- Lane closure tapers
- Shoulder closure tapers
- Downstream tapers
- To separate opposing lanes of traffic
- To identify temporary hazardous conditions (vertical cuts on roadway shoulders, etc.)
- Detours

9.10 TAPERS

Generally, on multi-lane highways, tapers shall be 40:1. However, on multi-lane highways through urban areas where the original gazetted speed is less than 60km/hr and multiple, closely spaced intersections prevent the use of a 40:1 taper, the taper length may be reduced to 5:1.

Where consecutive tapers are required for lane closures on a multi-lane highway, the standard drawings indicate that a distance of 350 m to 500 m be maintained between the tapers. In situations where site conditions do not allow the minimum distance to be used, the distance between the tapers may be reduced.

On two-lane highways tapers shall be 5:1.

Tapers require delineation. On rural highways, glow posts, cones or traffic barrels/drums may be used. On urban highways, traffic barrels/drums must be used if the original gazetted speed is greater than 60km/hr.

On multi-lane Long Duration bridge projects, traffic barrels/drums must be used to delineate tapers. For two-lane bridge projects, glow posts, cones or traffic barrels/drums may be used.

The number and spacing required for devices delineating tapers and travel lanes is shown on the standard drawings.

9.11 SEQUENTIAL ARROWBOARDS AND VARIABLE MESSAGE BOARDS

In situations where lane closures are necessary on multi-lane highways, a sequential arrow board is required to supplement the signing. Sequential **a**rrow boards must always be used in conjunction with other Traffic Control Devices.

Sequential Arrow boards are very effective for:

- Providing traffic with positive guidance for passing to the left or right of the work area.
- Encouraging traffic to leave the closed lane well in advance of the work area.
- Providing additional advance warning.

Sequential arrow boards must not be used on highways with opposing traffic.

On urban highways, when the ASDT exceeds 10,000 vehicles per day or when sight distance is restricted, an electronic variable message board is also required in advance of the sequential arrow board.

On rural highways, when the ASDT exceeds 10,000 vehicles per day, an advance sequential arrow board or electronic variable message board is required.

The electronic variable message board should be strategically placed in advance of the Work Area to best advise motorists of detours, alternate routes or highway conditions. This device should be positioned on the same shoulder as the lane closure. Where site conditions such as shoulder widths do not allow for such placement, the electronic variable message board may then be positioned on the opposite shoulder.

Sequential arrowboards and electronic variable message boards must conform with the specifications.

9.12 SPECIALIZED TRAFFIC CONTROL DEVICES

There are several other Traffic Control Devices that can be used to supplement standard traffic control measures. These devices are generally used in unique situations or for specific activities (e.g. extremely high traffic volumes, seal coat projects, etc.).

Examples of Specialized Traffic Control Devices are:

- Rumble Strips (Rope or Mat Type)
- Special information signs developed for unique projects
- Pilot vehicles

9.13 OVERHEAD ILLUMINATION AND FLASHERS

Activities within the Work Zone often create conditions on or near the travel lane that are particularly hazardous at night when the road user's visibility is reduced. It is often necessary to supplement the reflectorized signs, barriers and channelizing devices with overhead lighting and/or barricade warning lights. Special attention must be taken to ensure that portable overhead lighting does not "blind" the road users.

Barricade warning lights are either steady-burn or flashing type units. Steady-burn lights are used for delineation and should be mounted on a series of barricades or channelizing devices. Flashing lights are used to draw attention to warning signs, obstructions or other hazards **i**n the Work Zone.

The types and intended use of barricade warning lights are:

- Type A

  Type A Low Intensity Flashing Warning lights are most commonly mounted on barricades or advance warning signs, and are intended to warn motorists of an obstacle or other potential hazard.

- Type C

  Type C Steady Burn lights are used to delineate the edge of the travelled way on detour curves, lane changes and transitions.

9.14 PRECAST CONCRETE F SHAPED BARRIERS

Precast concrete F-shaped barriers shall be used on Long Duration Projects with stationary Work Areas where it is necessary to provide a protective barrier between the travel lane and the Work Area due to worksite hazards and/or the need to maintain higher speeds. Precast concrete F-shaped barriers must be interlocked as shown on the standard drawings in order to function properly. Screening may be required on the barriers in situations where a visual barrier is required for the Work Area or where headlight glare from approaching vehicles is a problem.

9.15 INTERLOCKING CRASH TESTED WATER FILLED BARRIERS

Water filled barriers, meeting the requirements of NCHRP 350 and the applicable Test Level, which are installed as an approved crash-tested system may be used where the design deflection room is available behind the barrier and where the work zone speed of the adjacent travel lanes is consistent with the crash test speed. For example, TL-4 and TL-3 systems are acceptable for operating speeds of 110 lm/h and 100 km/h. TL-2 is acceptable for 70 km/h.

9.16 WATER FILLED BARRICADES

Water filled barricades can be used if the gazetted speed is 60 km/hour or less and the drop off is less than 300 mm in height.

10. DOUBLE FINES IN WORK ZONES

The use and installation of signage for work zones "Double Fine Begins" and "Double Fine Ends" are used to define the active Work Areas where the workers are actually present. Where there is no active work areas, these signs must be covered and/or removed.

11. STANDARD DRAWINGS FOR URBAN HIGHWAYS

The standard drawings for urban highways included with this document are categorized as either "high speed/high traffic volume" or "low speed /low traffic volume". These categories represent the majority of urban situations in the province. Other urban situations such as low speed/high volume represent infrequent or unique situations and must be addressed on a project by project basis.

The gazetted speed is the determining factor for establishing the required sign sizes**.**

High speed/high volume urban highways are those which have an original gazetted speed greater than 60 km/hr and an ASDT exceeding 10,000 vehicles per day.

Low speed/low volume urban highways are those which have an original gazetted speed up to 60 km/hr and an ASDT less than 10,000 vehicles per day.

The ASDT volumes for provincial highways can be obtained on the Department's website at www.infratrans.gov.ab.ca.

12. THE CLEAR ZONE CONCEPT IN WORK ZONES

12.1 GENERAL

The forgiving roadside concept should be applied to all work zones as appropriate for the type of work being done and the extent existing roadside conditions allow. This includes providing a clear recovery area for longer term projects and using traffic control devices and safety appurtenances that are crash-worthy or shielded.

Additionally, work zones should be developed to provide a safe environment for pedestrians, bicyclists, and highway workers. This could mean providing safe pathways where pedestrians and bicyclists are allowed to traverse the work zone by shielding adjacent excavations or other unsafe areas.

12.1.1 APPLICATION OF THE CLEAR ZONE CONCEPT IN WORK ZONES

The work-zone "clear zone" is an unobstructed relatively flat area in a work zone that extends outward from the edge of the travelled way. The location of the "travelled way" through a work zone may be different from the usual highway "travelled way" due to detours or lane closures. The extent of the clear zone provided is measured perpendicular from the edge of the travelled way to the face of the closest obstacle or hazard. Because of the limited horizontal clearance available and the heightened awareness of motorists through work zones, the clear zone requirements are less than the before-work conditions. The amount of available clear zone in a work zone affects the decision to delineate or shield exposed hazards such as concrete barrier ends, fixed objects, steep slopes or drop-offs.

Engineering judgement must be used in applying the "clear zone" to work zones. Depending on site restrictions, it may only be feasible to provide an operational clearance. Designers should determine the width of a work zone clear-zone on a project by project basis, considering traffic speeds, volumes, roadway geometrics, available right-of-way, and duration of work.

Where roadside space is available, the clear zone provided in the work zone should generally comply with the values shown in Table 12.1.1. The location of collateral hazards such as parked equipment and material storage should be controlled and be subject to a greater clear zone distance if/when practical.

Generally, for ease of application of the clear zones, there is no adjustment made for horizontal curves.

TABLE 12.1.1 SUGGESTED CLEAR ZONE DISTANCES FOR WORK ZONES

Posted Speed in Work Zone (km/hr)	Distance (m)
100 – 110	9
90	7
70 – 80	5
50 – 60	4

SECTION II

STANDARD DRAWINGS FOR TRAFFIC CONTROL ON RURAL HIGHWAYS

TRAFFIC ACCOMMODATION IN WORK ZONES

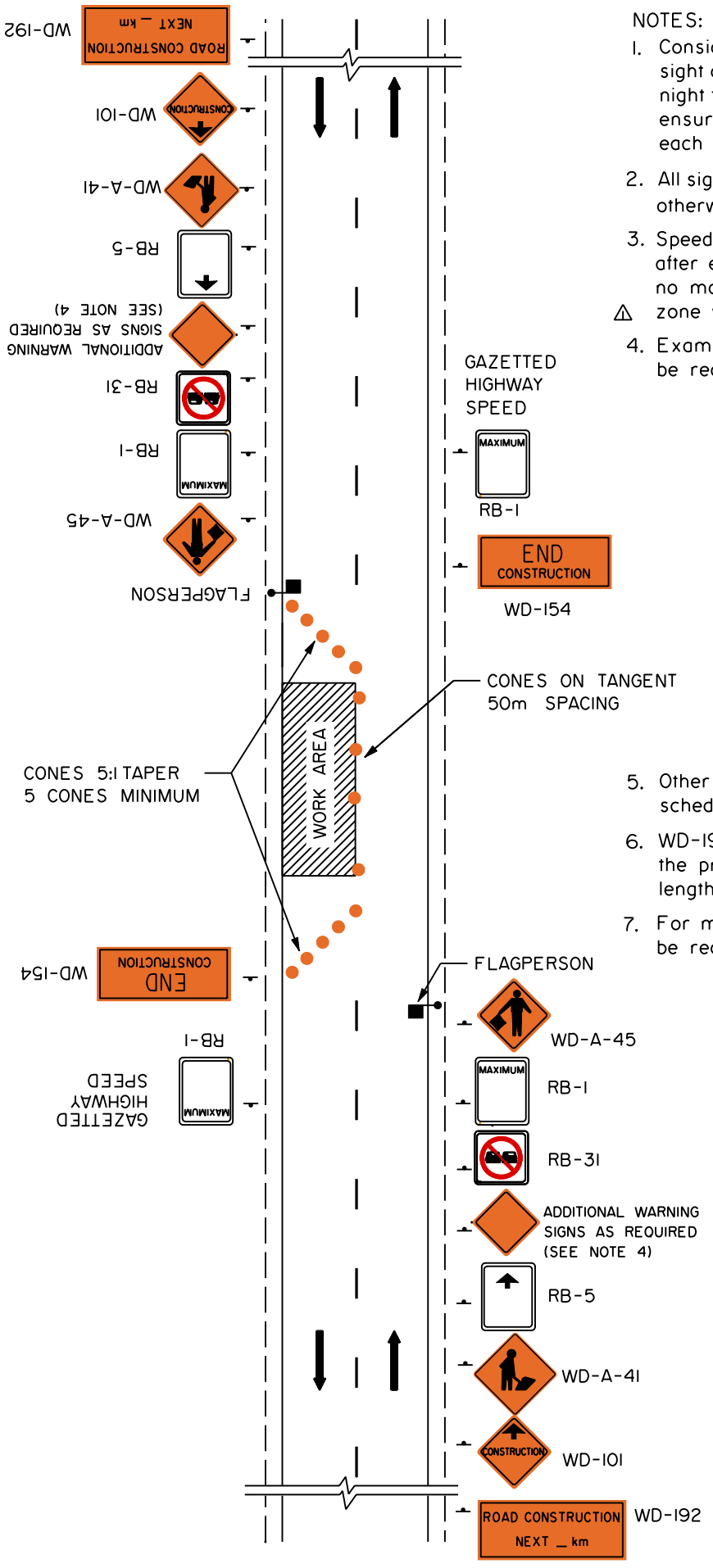
LIST OF DRAWINGS

LONG DURATION			
TCS-B Drawing No.	**2 Lane Undivided**	**4 Lane Divided**	**Description**
1.1A	X		One Lane Closure (One Lane Alternating Traffic)
1.1B		X	One Lane Closure
1.2A	X		No Lane Closure
1.2B		X	No Lane Closure
1.3A	X		Two Way Traffic (Reduced Roadway Width)
1.4A	X		Intersecting Roads
1.4B		X	Intersecting Roads
1.5A	X		Obstruction Within Work Area
1.6A	X		Truck Entrance (Haul Route)
1.6B		X	Truck Entrance (Haul Route)
1.7A	X		No Centre Line Pavement Marking
1.7B		X	No Centre Line Pavement Marking
1.8A	X		Detour
1.9A	X		Shoulder Drop-Off (Within Work Zone)
1.11A	X		Delineation for Embankments and Fixed Objects (Within The Work Zone)
1.11B		X	Delineation for Embankments and Fixed Objects (Within The Work Zone)
1.15B		X	Bridge Deck Repair (Outside Lane) Clover Leaf Interchanges
1.16B		X	Bridge Deck Repair (Inside Lane) Clover Leaf Interchanges
1.17A	X		Chip Seal Coating Operations
1.17B		X	Chip Seal Coating Operations
1.18A	X		Double Seal and Graded Aggregate Seal Coating Operations

TRAFFIC ACCOMMODATION IN WORK ZONES

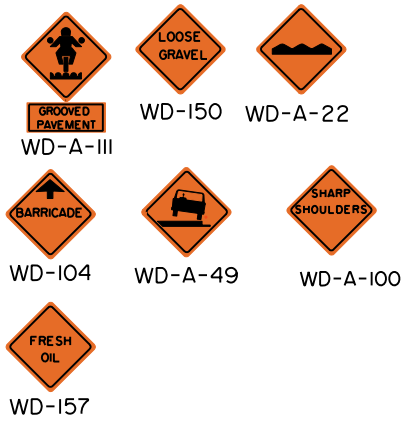
LIST OF DRAWINGS

LONG DURATION - BRIDGE SIGNING			
TCS-B Drawing No.	**2 Lane Undivided**	**4 Lane Divided**	**Description**
1.19B		X	Work Zone Speed >60km/h
1.20B		X	Work Zone Speed >60km/h or Work Area >300mm Drop Reduced Bridge Width
1.21B		X	Work Zone Speed >60km/h or Work Area >300mm Drop One Lane Closure
1.22A	X		Work Zone Speed <60km/h Two Way Traffic
1.23B		X	Work Zone Speed <60km/h
1.24B		X	Work Zone Speed <60km/h and Work Area <300mm Drop
1.25B		X	Work Zone Speed <60km/h and Work Area <300mm Drop One Lane Closure
1.26A	X		Work Zone Speed <60km/h and Work Area <300mm Drop (One Lane Alternating Traffic)
1.27A	X		Work Zone Speed <60km/h and Work Area >300mm Drop (One Lane Alternating Traffic)
1.28A	X		Localized Excavation Adjacent to Shoulder (Within Work Zone)
1.28B		X	Localized Excavation Adjacent to Shoulder (Within Work Zone)
1.29B			Highway Transition from Four Lane Divided to Two Lane Undivided



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work zone where there is a restricted speed zone. ⚠
4. Examples of additional warning signs that may be required in conjunction with this plan are:



5. Other hazard signs as shown in the schedule of signs may be used as required.
6. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.
7. For mobile operation, cones may not be required

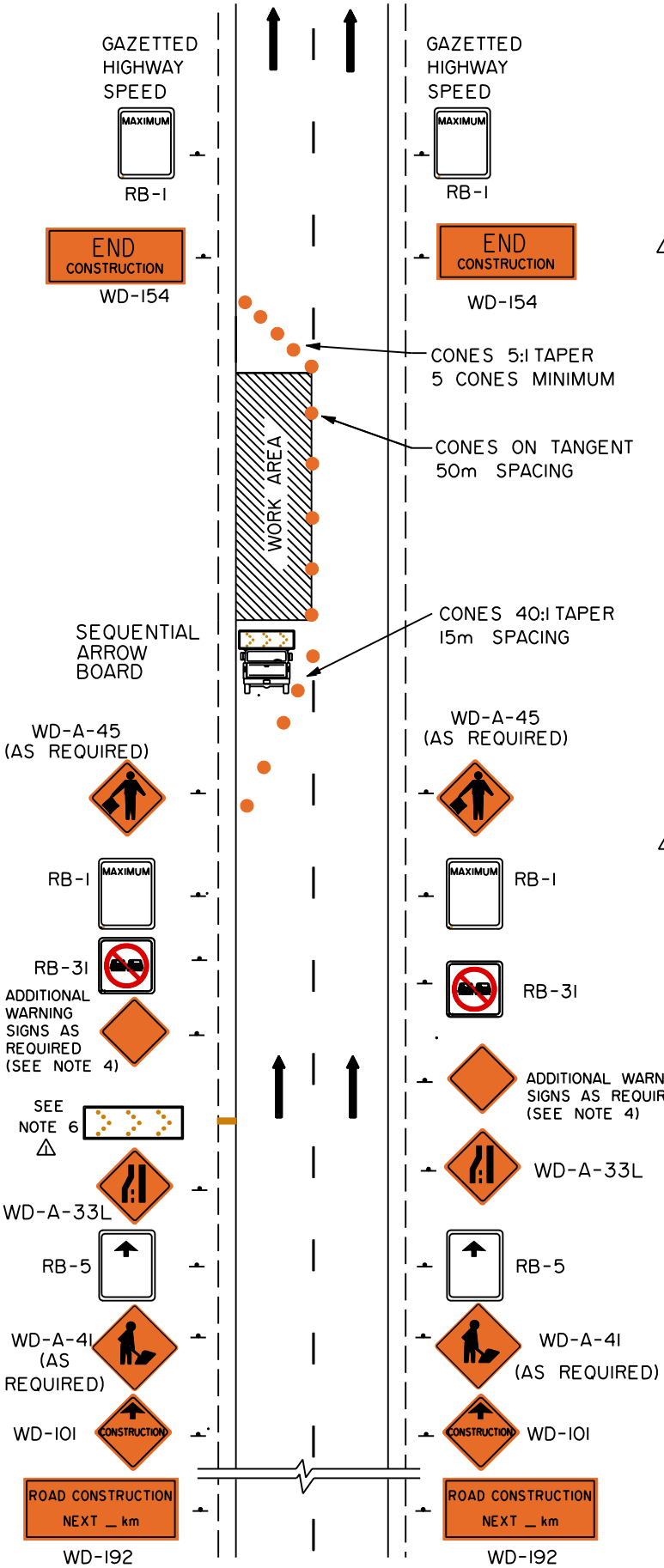
No.	REVISIONS	BY	DATE
3			
2			
1	Title Block and note updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

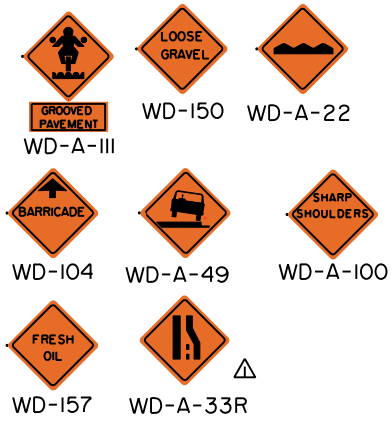
LONG DURATION - SIGNING ⚠
ONE LANE CLOSURE
(ONE LANE ALTERNATING TRAFFIC)
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.1A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work ⚠ zone where there is a restricted speed zone.
4. Examples of additional warning signs that may be required in conjunction with this plan are:



5. Other hazard signs as shown in the schedule of signs may be used as required.
6. The Sequential Arrow Board shall be located in the centre of the closed lane. An additional Sequential Arrow Board is required when ⚠ traffic volume exceeds 10000 vehicles per day (ASDT) or when sight distance is restricted.
7. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.
8. For mobile operation, cones may not be required.

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Notes and Title Block updated and sign added	JM	Dec 31/07

Approved:
Original signed by Tim Hawnt
Executive Director, Technical Standards Branch
Date: MARCH, 2001

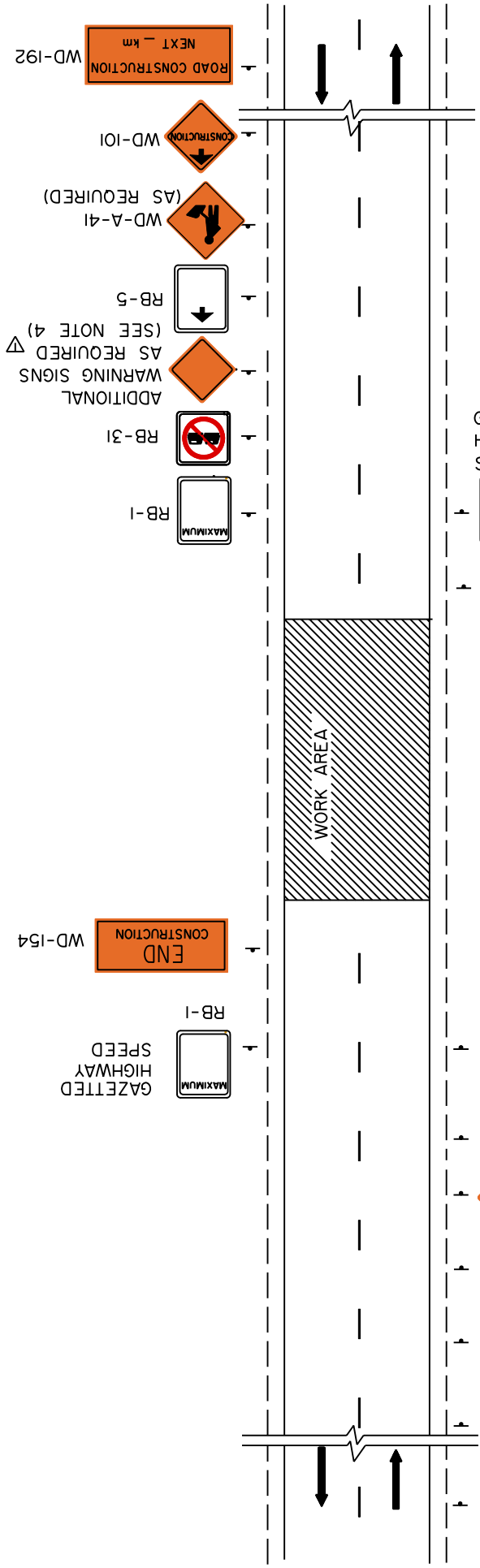
Alberta Transportation

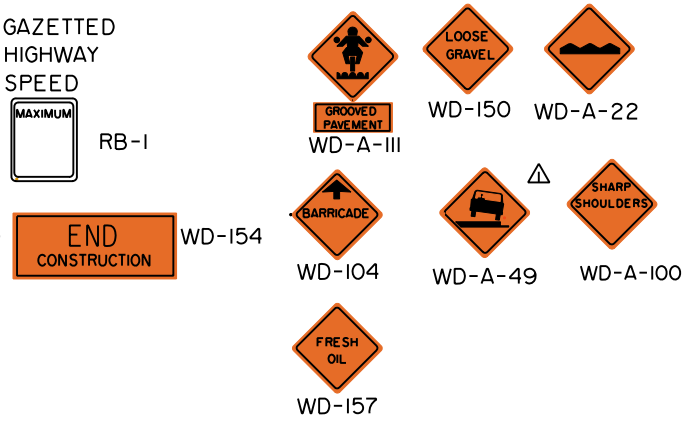
LONG DURATION - SIGNING ⚠

ONE LANE CLOSURE

FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C..	Checked By: P.H..	Scale: N.T.S.	Dwg No.: TCS-B-1.1B





NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work zone where there is a restricted speed zone. ⚠
4. Examples of additional warning signs that may be required in conjunction with this plan are:

5. Other hazard signs as shown in the schedule of signs may be used as required.
6. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Notes and Title Block updated, signs repositioned and deleted.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

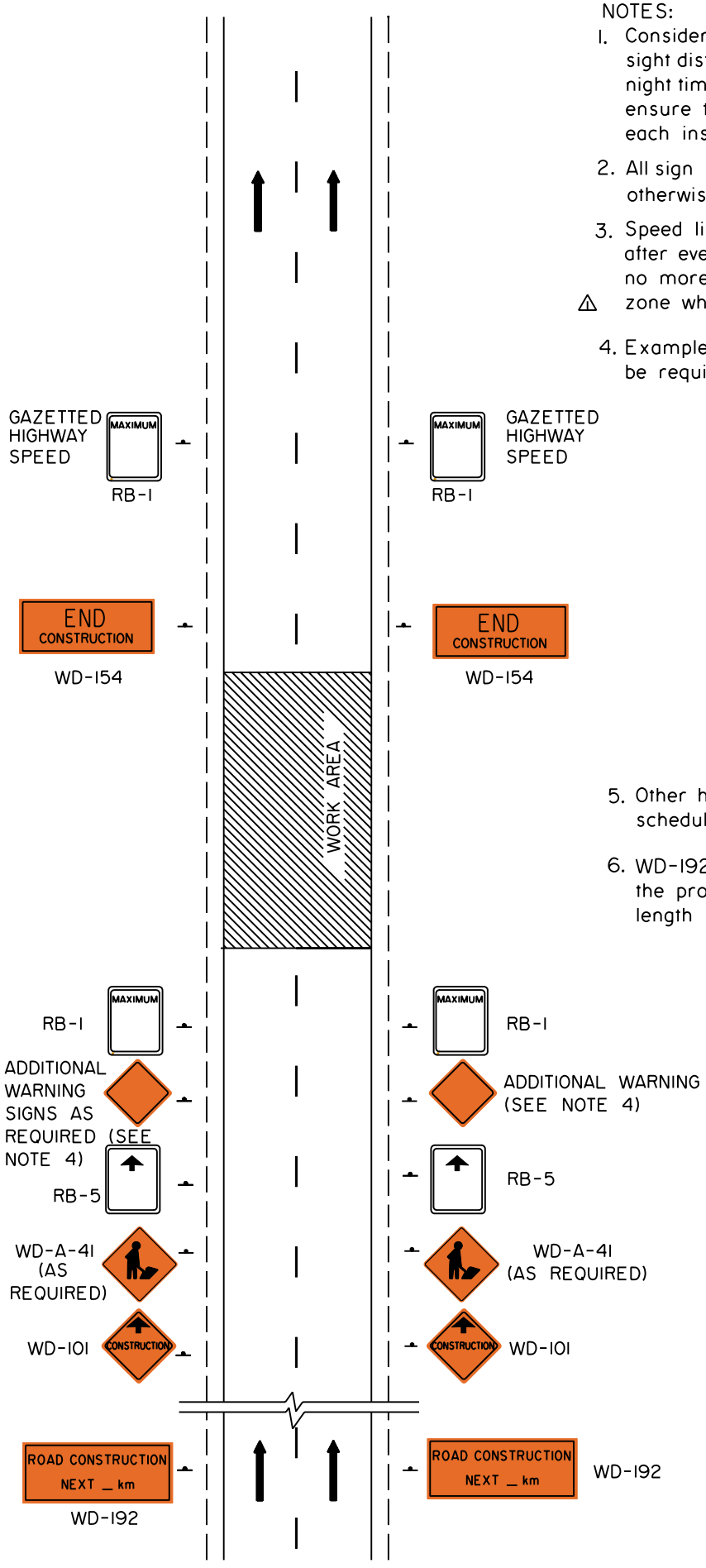
Alberta Transportation

LONG DURATION - SIGNING ⚠1

NO LANE CLOSURE

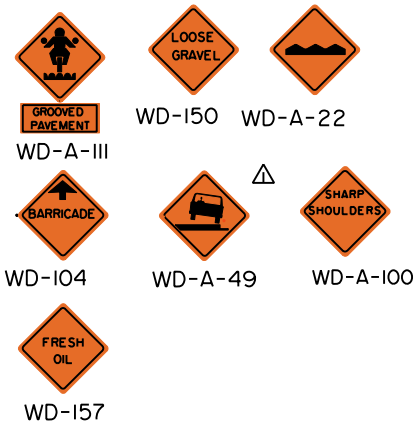
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.2A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work ⚠1 zone where there is a restricted speed zone.
4. Examples of additional warning signs that may be required in conjunction with this plan are:



5. Other hazard signs as shown in the schedule of signs may be used as required.
6. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.

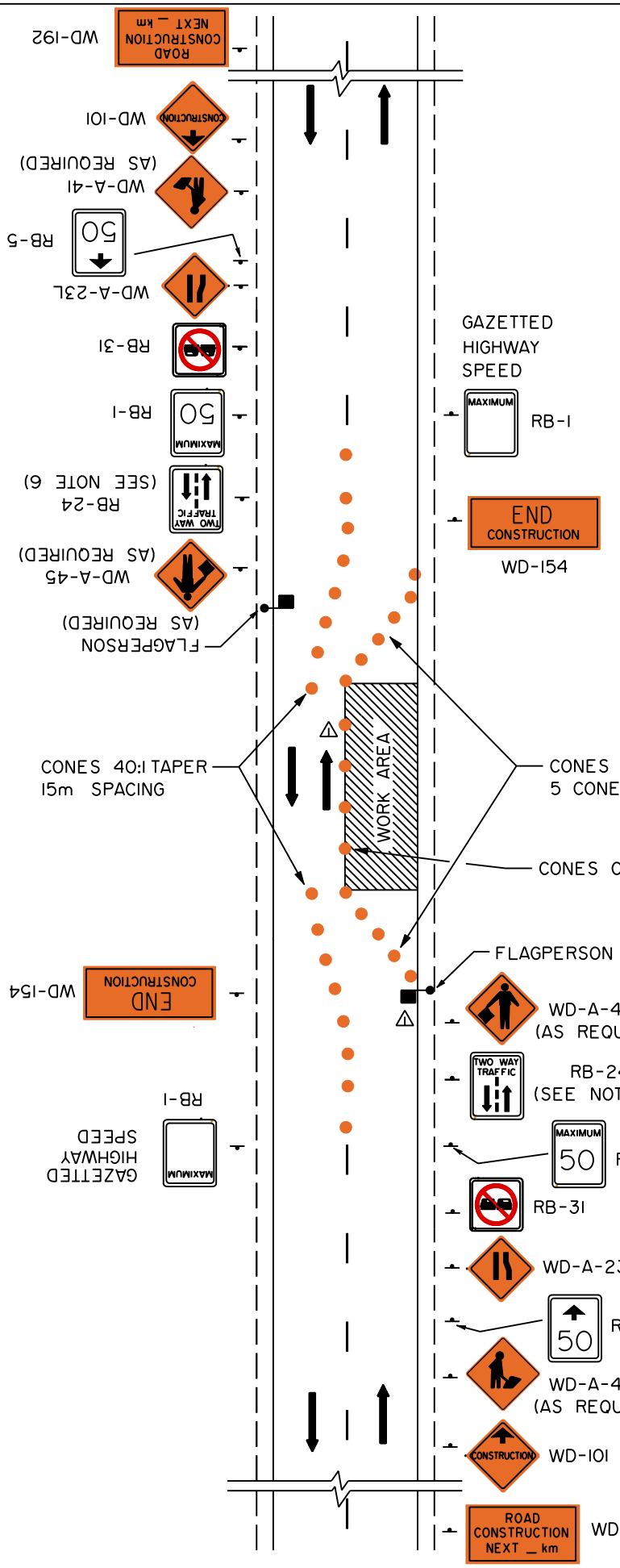
No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Sign deleted, note and Title Block updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date:

Alberta Transportation

LONG DURATION - SIGNING ⚠1
NO LANE CLOSURE
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.2B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work zone where there is a restricted speed zone. ⚠
4. To maintain two lane traffic around the work area, a minimum width of 3.5m is required for each lane.
5. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.
6. RB-24 (two way traffic) sign shall be placed after every intersecting roadway and shall be no more than 1.6 km apart, throughout the work area. ⚠

No.	REVISIONS	BY	DATE
3			
2			
1 ⚠	Notes and Title Block updated, cones added, cone deleted.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

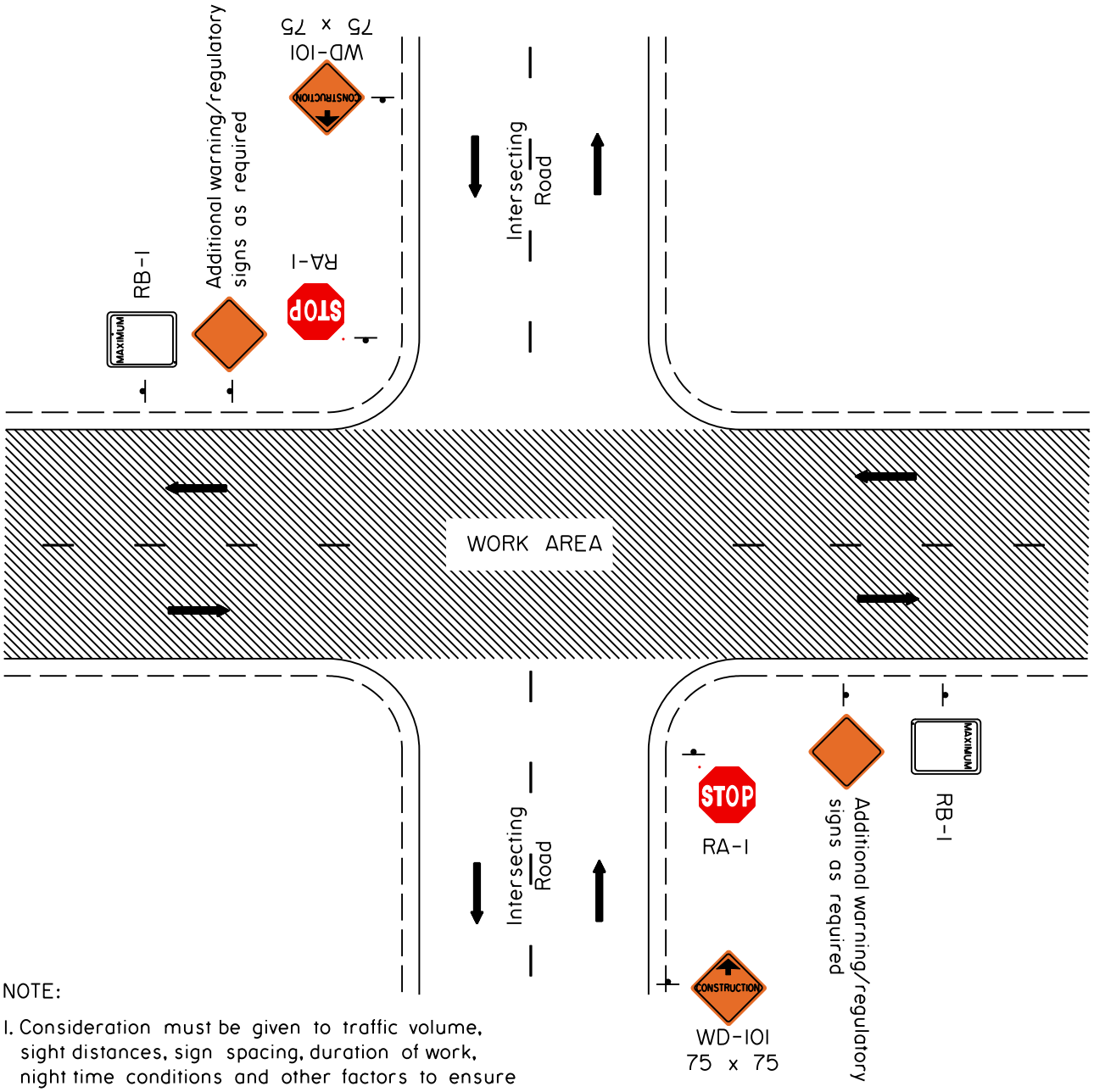
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING TWO WAY TRAFFIC (REDUCED ROADWAY WIDTH) TWO LANE UNDIVIDED HIGHWAY ⚠

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.3A



NOTE:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

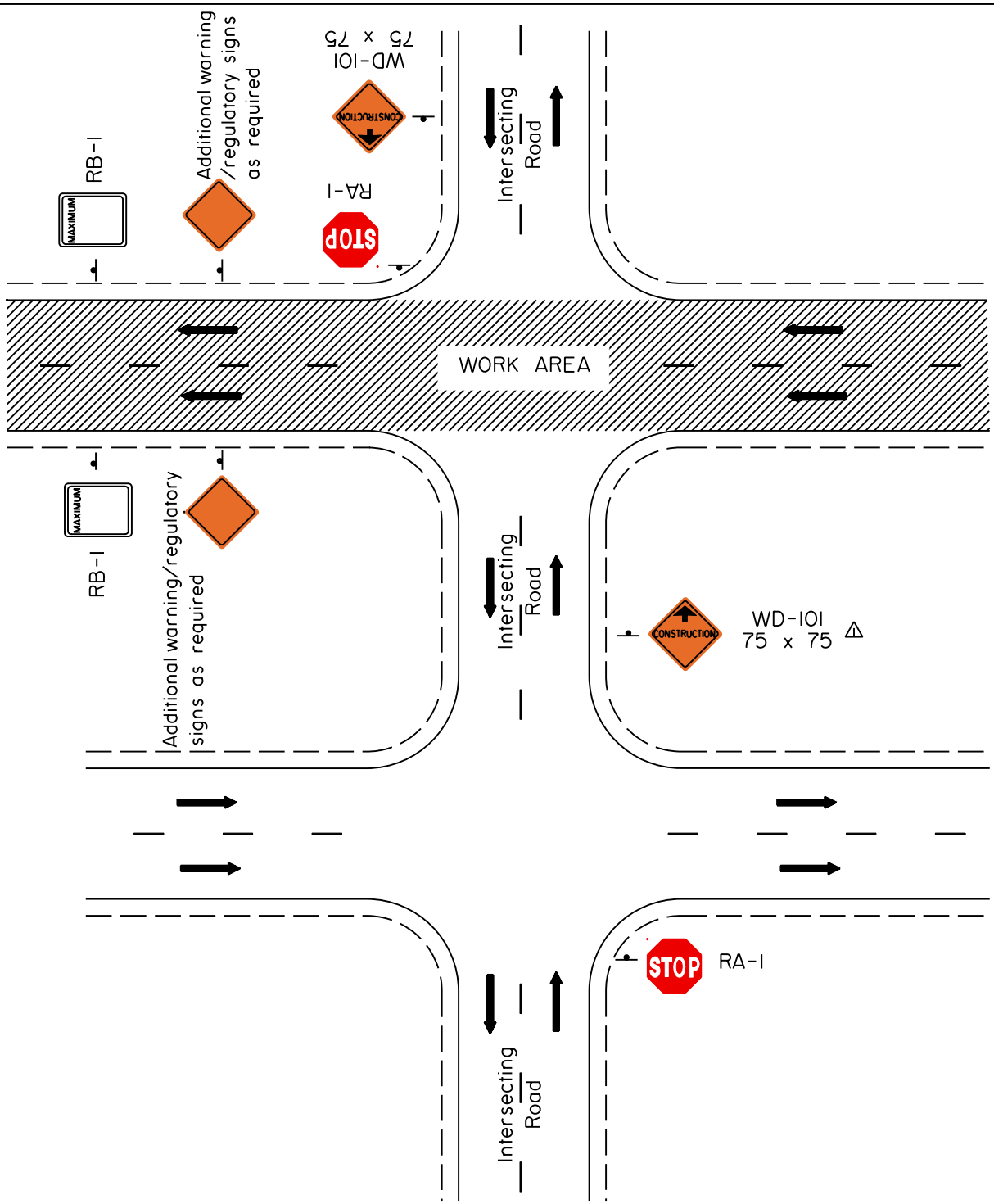
Alberta Transportation

LONG DURATION - SIGNING

INTERSECTING ROADS

TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.4A



NOTE:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated and signs repositioned.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

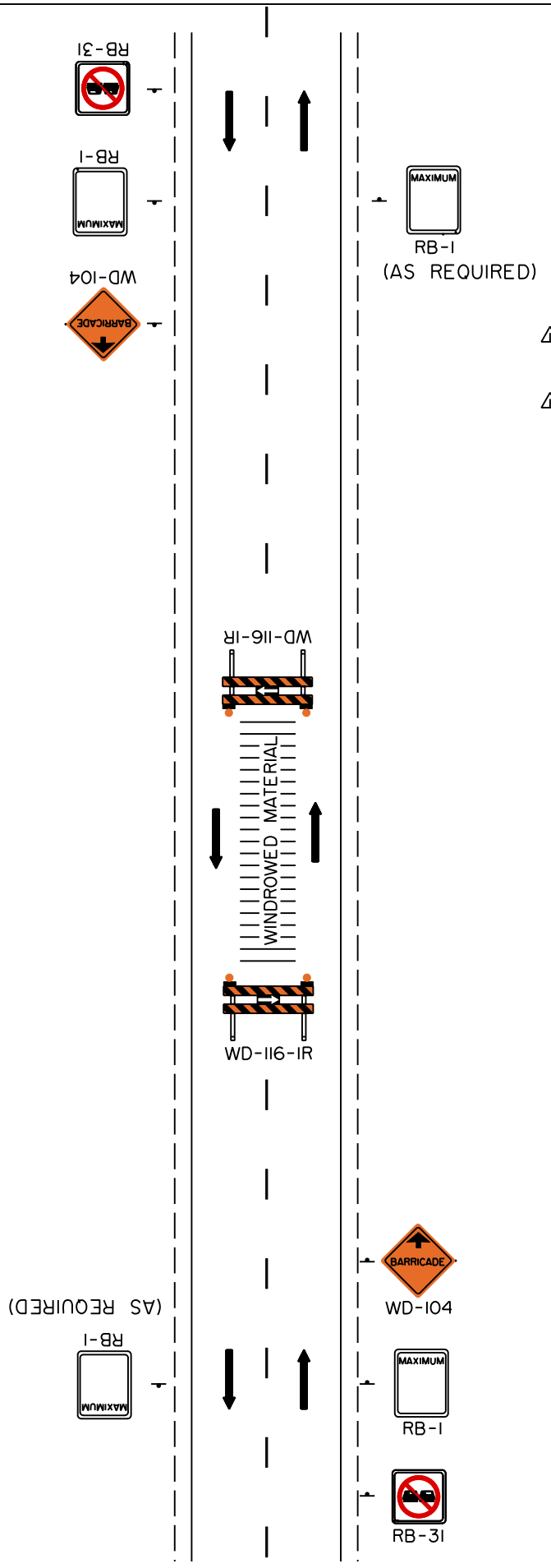
Alberta Transportation

LONG DURATION - SIGNING 1

INTERSECTING ROADS

FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.4B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work zone where there is a restricted speed zone.
4. During darkness two type "A" flashing lights shall be placed on top of each barricade.
5. A minimum lane width of 3.5m must be maintained.

No.	REVISIONS	BY	DATE
3			
2			
1	Note and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING 1

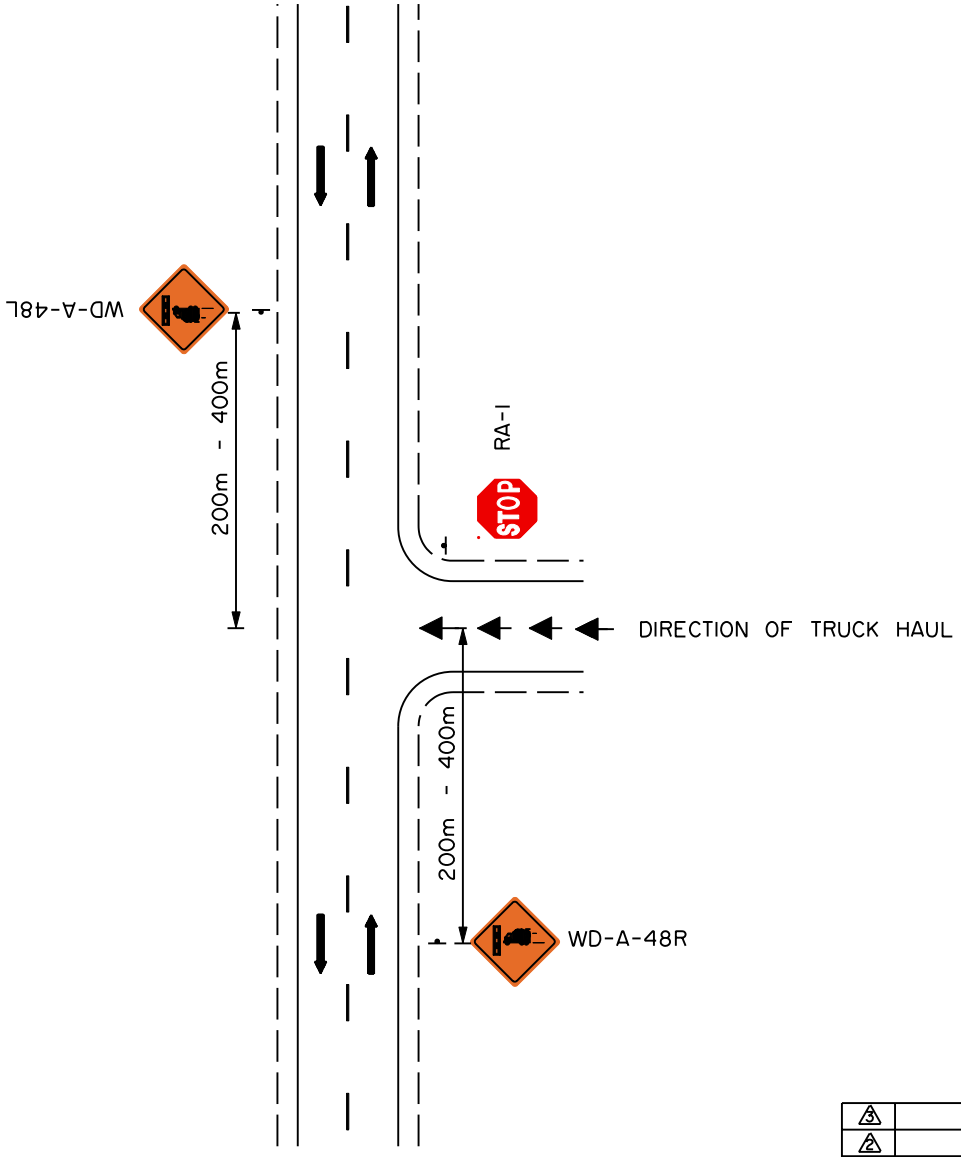
OBSTRUCTION WITHIN WORK AREA

TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.5A

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.



No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

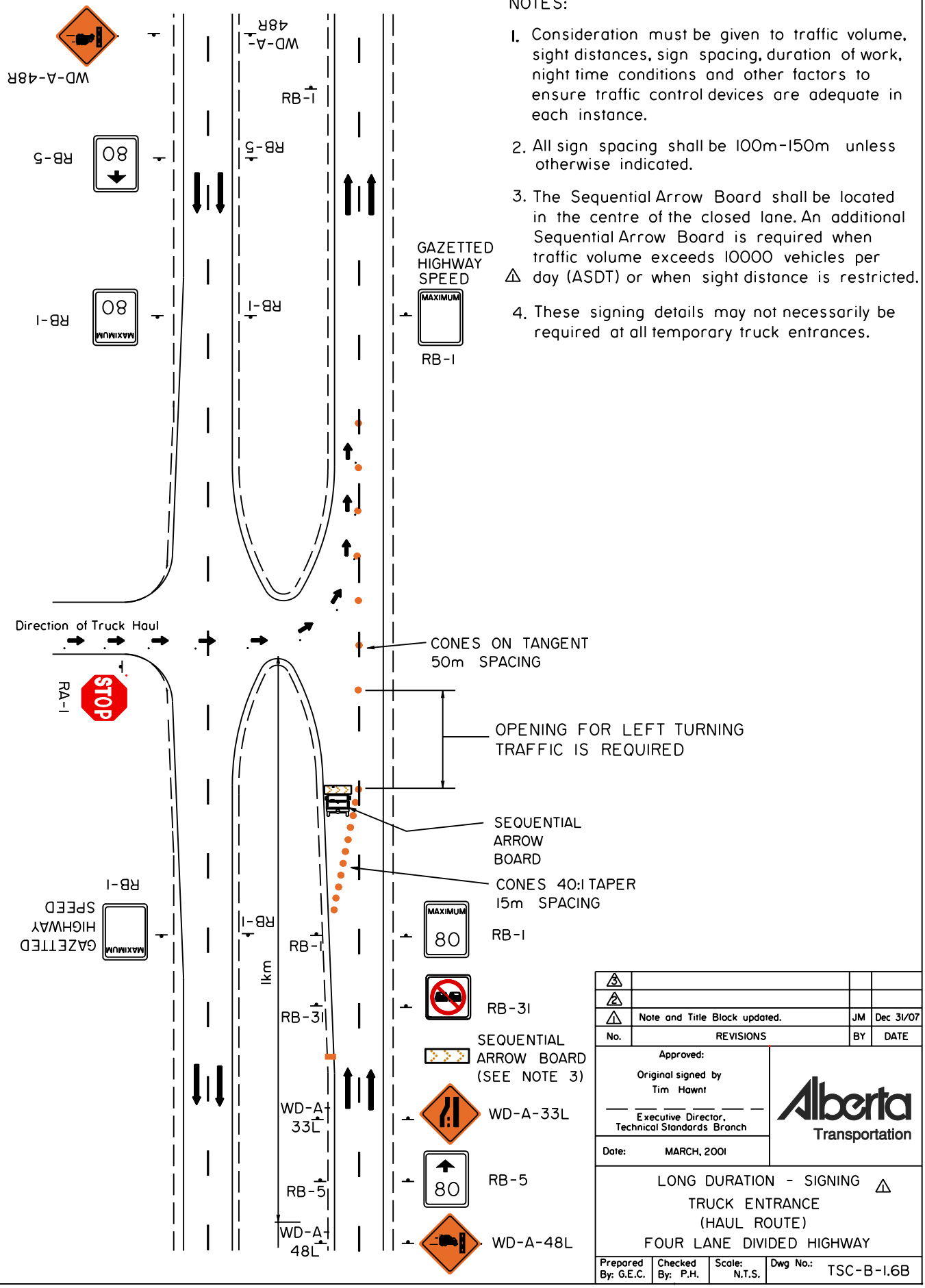
Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING ⚠1

TRUCK ENTRANCE
(HAUL ROUTE)
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.6A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. The Sequential Arrow Board shall be located in the centre of the closed lane. An additional Sequential Arrow Board is required when traffic volume exceeds 10000 vehicles per ⚠1 day (ASDT) or when sight distance is restricted.
4. These signing details may not necessarily be required at all temporary truck entrances.

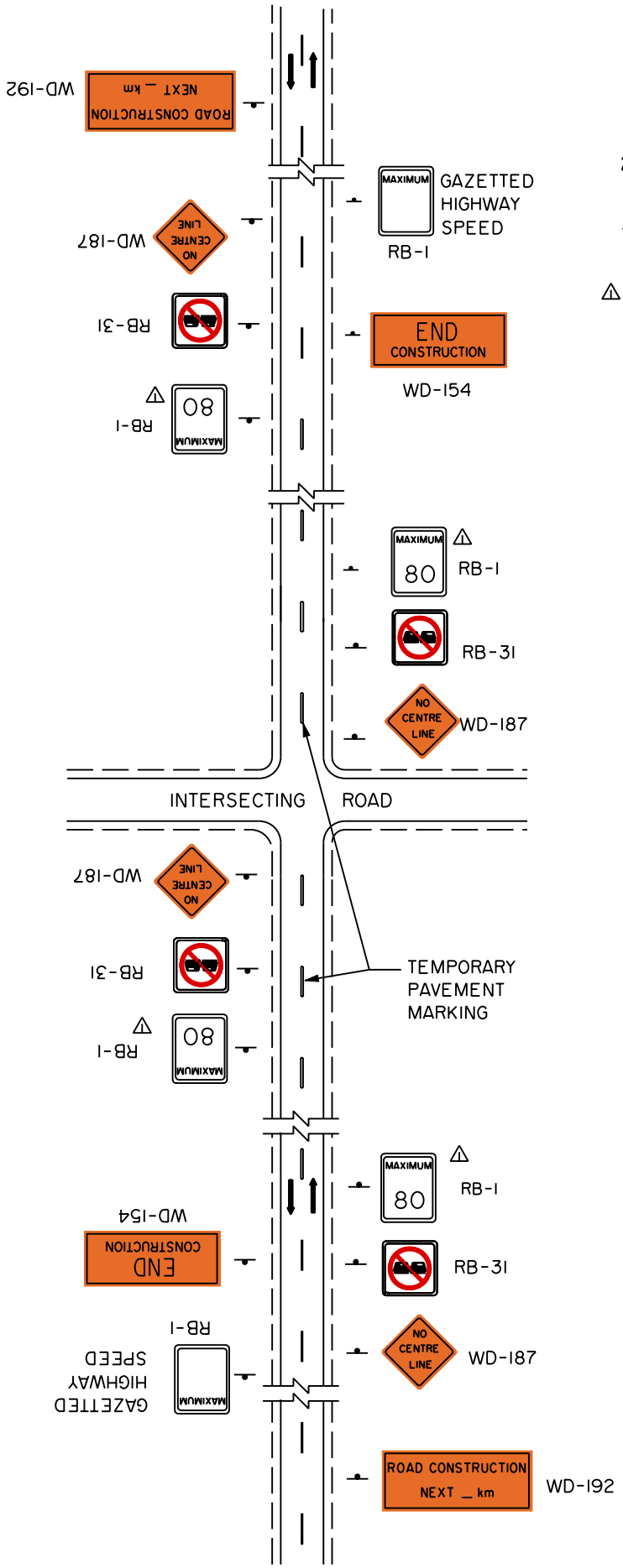
No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Note and Title Block updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING ⚠1
TRUCK ENTRANCE
(HAUL ROUTE)
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TSC-B-1.6B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit/warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work zone where there is a restricted speed zone. ⚠
4. Temporary pavement marking requirement shall be as per specification.
5. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.

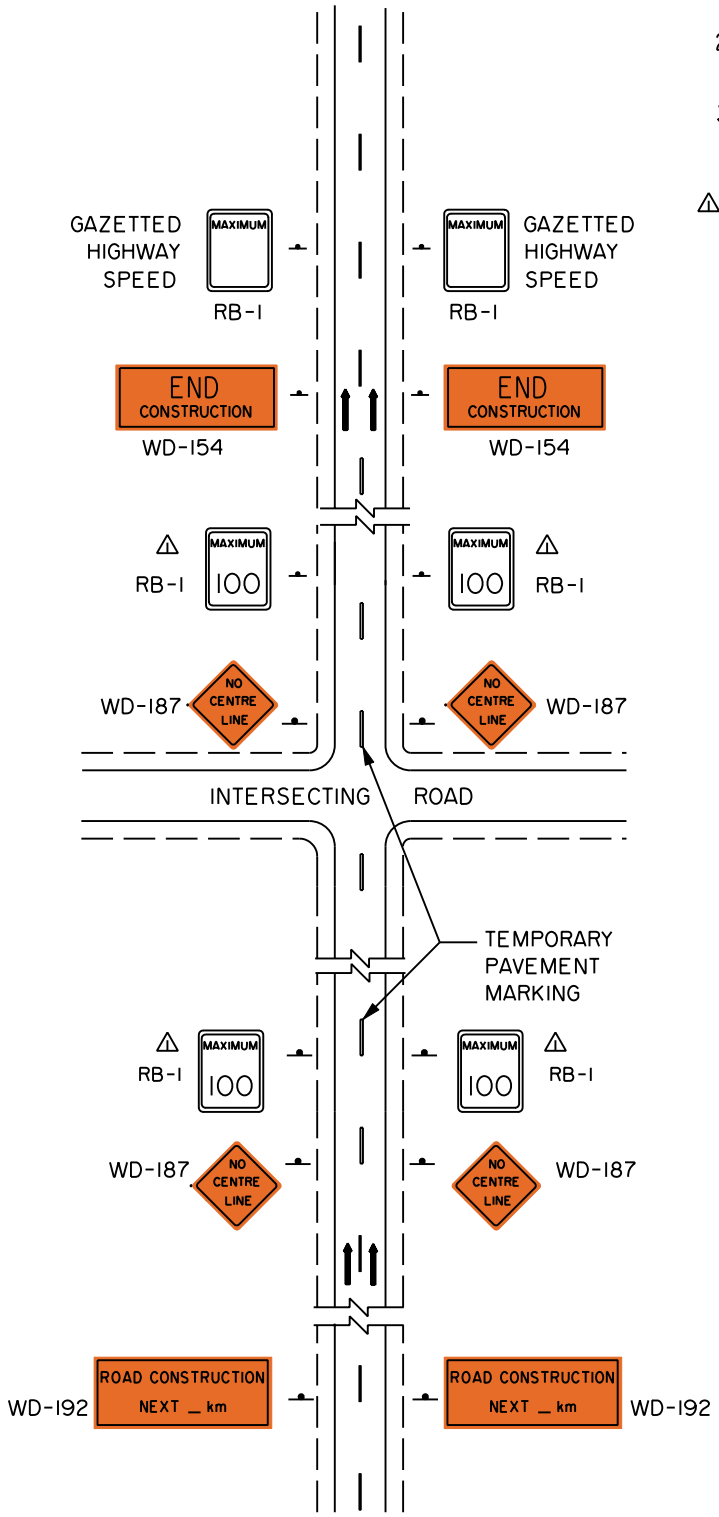
No.	REVISIONS	BY	DATE
3			
2			
1 ⚠	80km/h added, Title Block and note updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING ⚠
NO CENTRE LINE PAVEMENT MARKING
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.7A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit/warning signs shall be placed after every intersecting roadway and shall be no more than 5km apart throughout the work ⚠ zone where there is a restricted speed zone.
4. Temporary pavement marking requirement shall be as per specification.
5. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	100 km/h added, Title Block and note updated	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

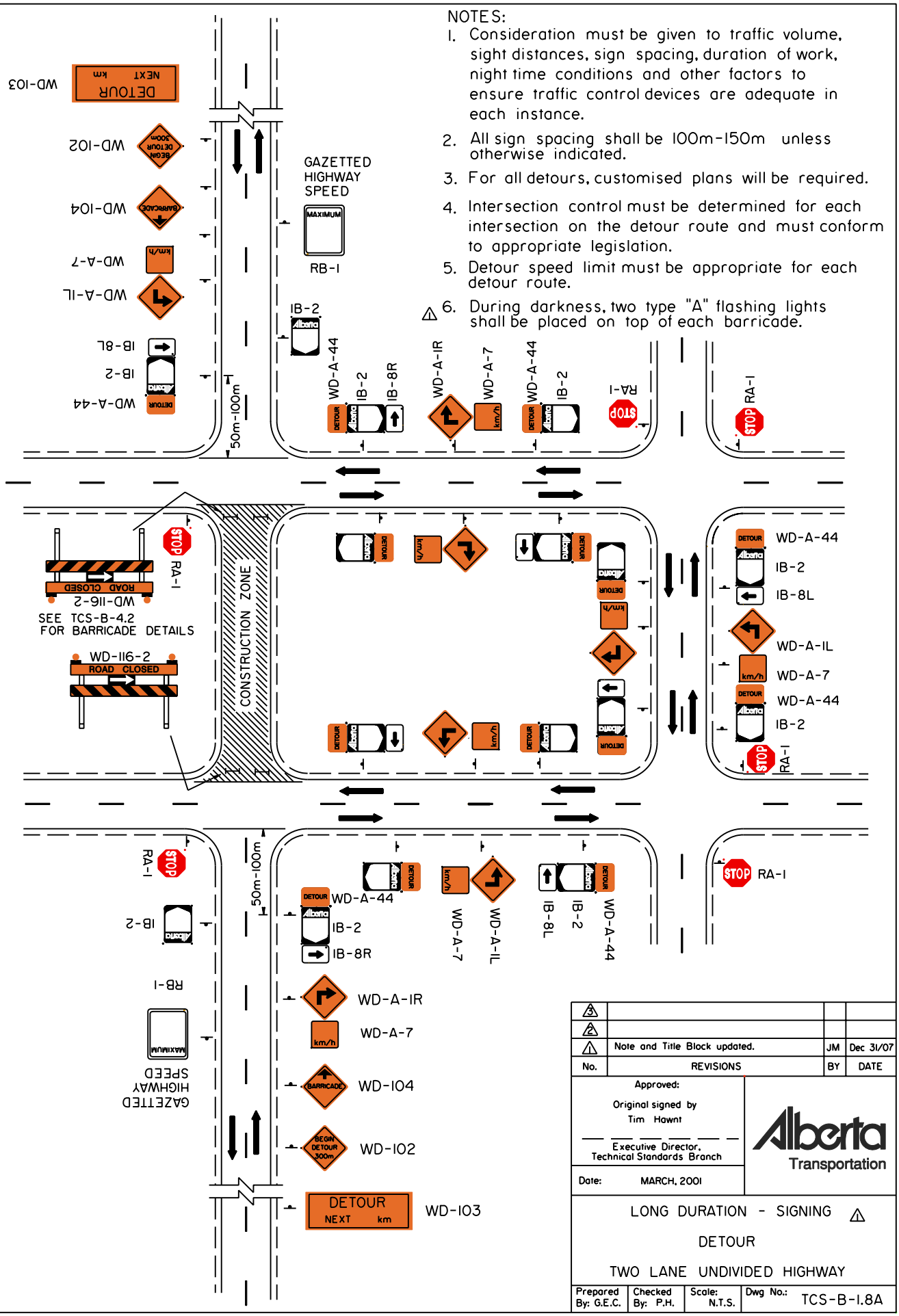
Alberta Transportation

LONG DURATION - SIGNING ⚠
NO CENTRE LINE PAVEMENT MARKING
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.7B

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. For all detours, customised plans will be required.
4. Intersection control must be determined for each intersection on the detour route and must conform to appropriate legislation.
5. Detour speed limit must be appropriate for each detour route.
6. ⚠ During darkness, two type "A" flashing lights shall be placed on top of each barricade.



No.	REVISIONS	BY	DATE
⚠	Note and Title Block updated.	JM	Dec 31/07
⚠			
⚠			

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING ⚠

DETOUR

TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.8A

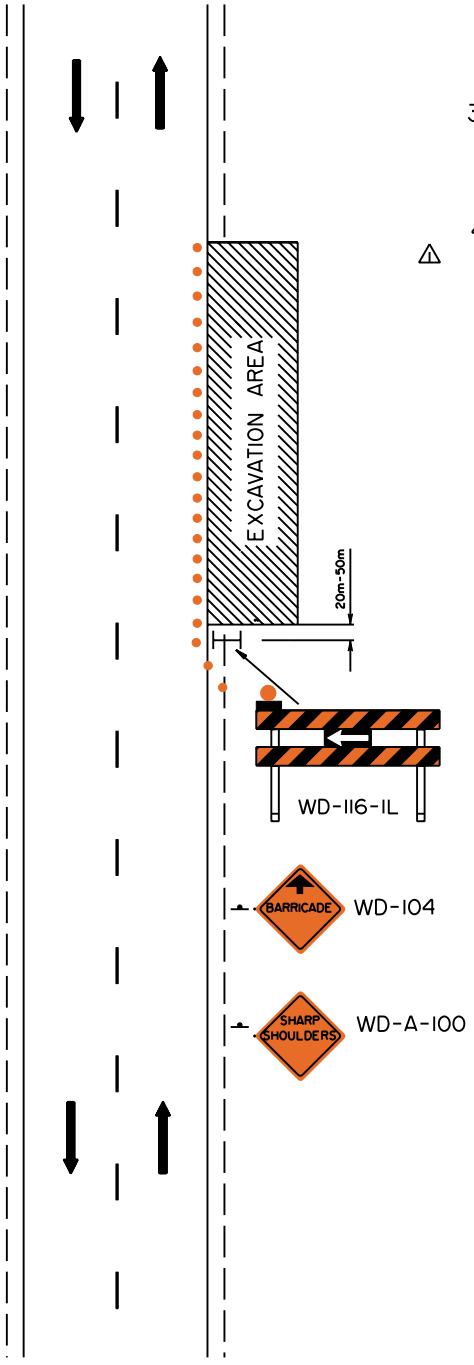
NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

3. Delineators with large bases at intervals of 20m. If the drop-off has a slope flatter than 3:1, delineator posts are not required.

4. During darkness, one type 'A' flashing light shall be placed on top of the barricade on the traffic side. ⚠1



No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Note and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

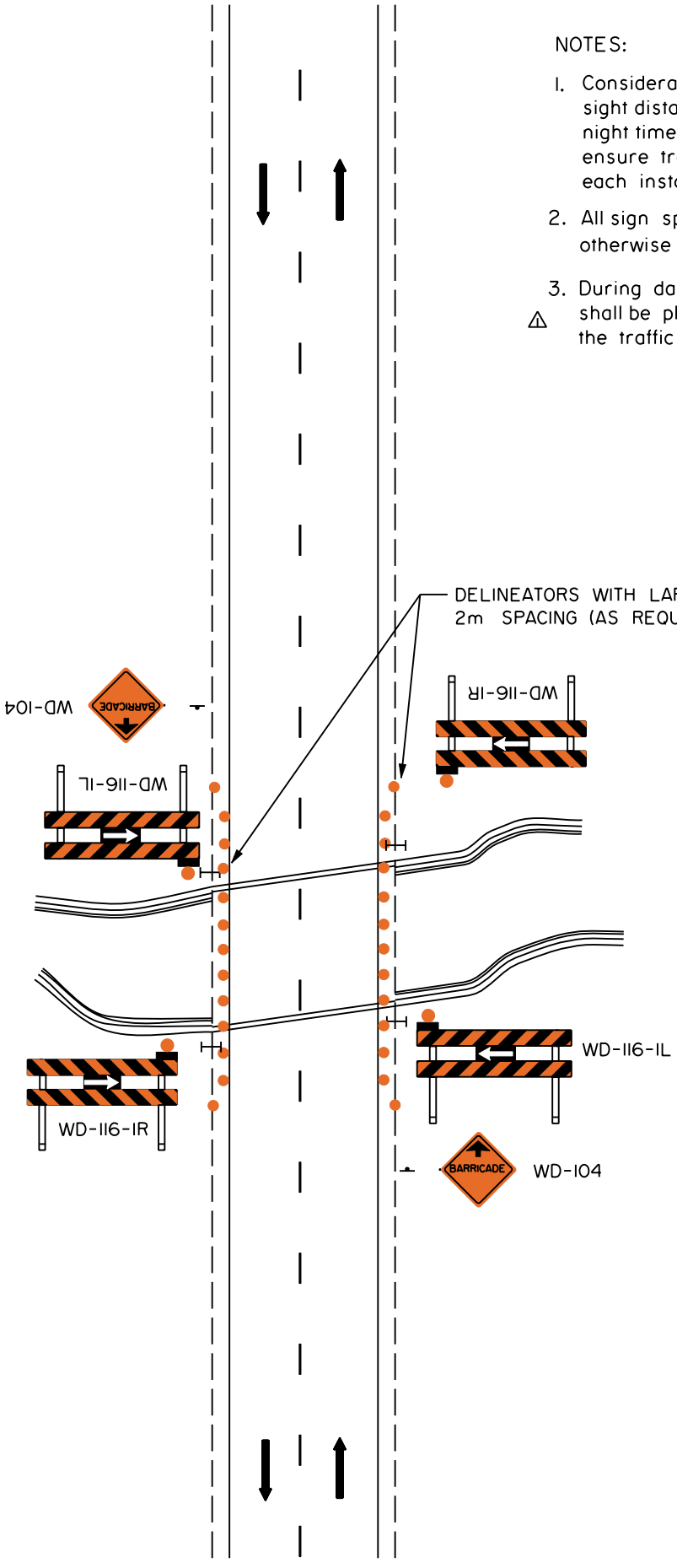
Alberta Transportation

LONG DURATION - SIGNING SHOULDER DROP-OFF (WITHIN WORK ZONE) TWO LANE UNDIVIDED HIGHWAY ⚠1

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.9A

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. During darkness, one type 'A' flashing light shall be placed on top of each barricade on the traffic side. ⚠1



No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Note and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

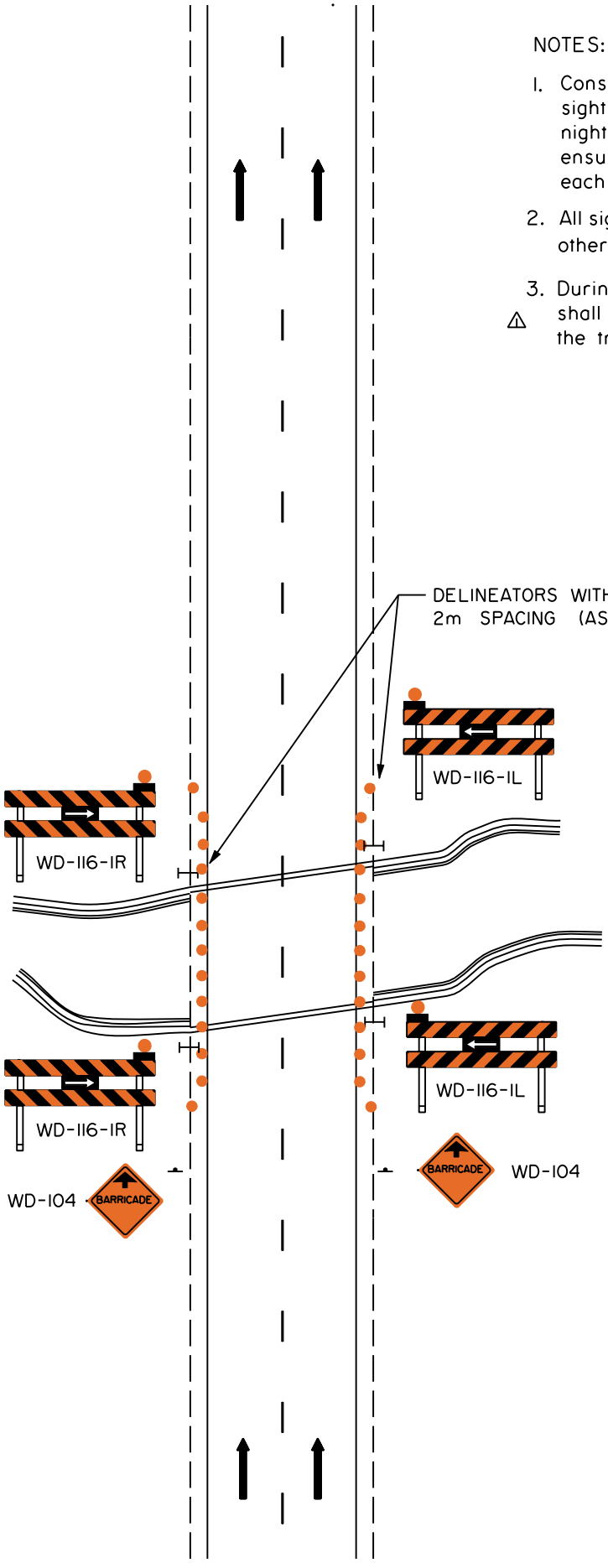
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING AND DELINEATION FOR EMBANKMENTS AND FIXED OBJECTS (WITHIN THE WORK ZONE) TWO LANE UNDIVIDED HIGHWAY ⚠1

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.11A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. During darkness, one type 'A' flashing light shall be placed on top of each barricade on the traffic side. ⚠1

No.	REVISIONS	BY	DATE
3			
2			
1	Note and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

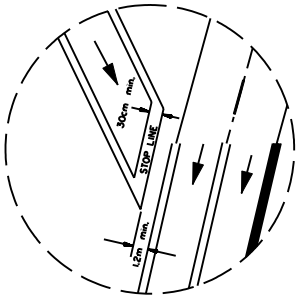
Alberta Transportation

LONG DURATION - SIGNING AND DELINEATION FOR EMBANKMENTS AND FIXED OBJECTS (WITHIN THE WORK ZONE) FOUR LANE DIVIDED HIGHWAY ⚠1

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.11B

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Conflicting lane markings must be removed.
4. See other typical drawings for advance signing.
5. During darkness, one type 'A' flashing lights shall be placed on top of each barricade on the traffic side.
6. Use of Sequential Arrow Board and Electronic Message Board as required.



DETAIL 'A'

— LEGEND —

TEMPORARY PAVEMENT MARKING DETAILS	
10cm WIDE LINE	YELLOW EDGE LINES FOR CRITICAL AREAS WHERE CROSSING IS PROHIBITED
10cm WIDE LINE	WHITE EDGE LINES AND LANE DIVIDING LINES PROHIBITING LANE CHANGE

DELINEATOR POSTS WITH LARGE BASES

BARRICADES

LARGE CONES

DETAIL 'B'

No.	REVISIONS	BY	DATE
3			
2			
1	Note added, note and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

LONG DURATION - BRIDGE SIGNING 1
BRIDGE DECK REPAIR
(OUTSIDE LANE)
CLOVER LEAF INTERCHANGES

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.15B

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Conflicting lane markings must be removed.
4. See other typical drawings for advance signing.
5. During darkness, one type 'A' flashing lights shall be placed on top of each barricade on the traffic side.
6. Use of Sequential Arrow Board and Electronic Message Board as required.

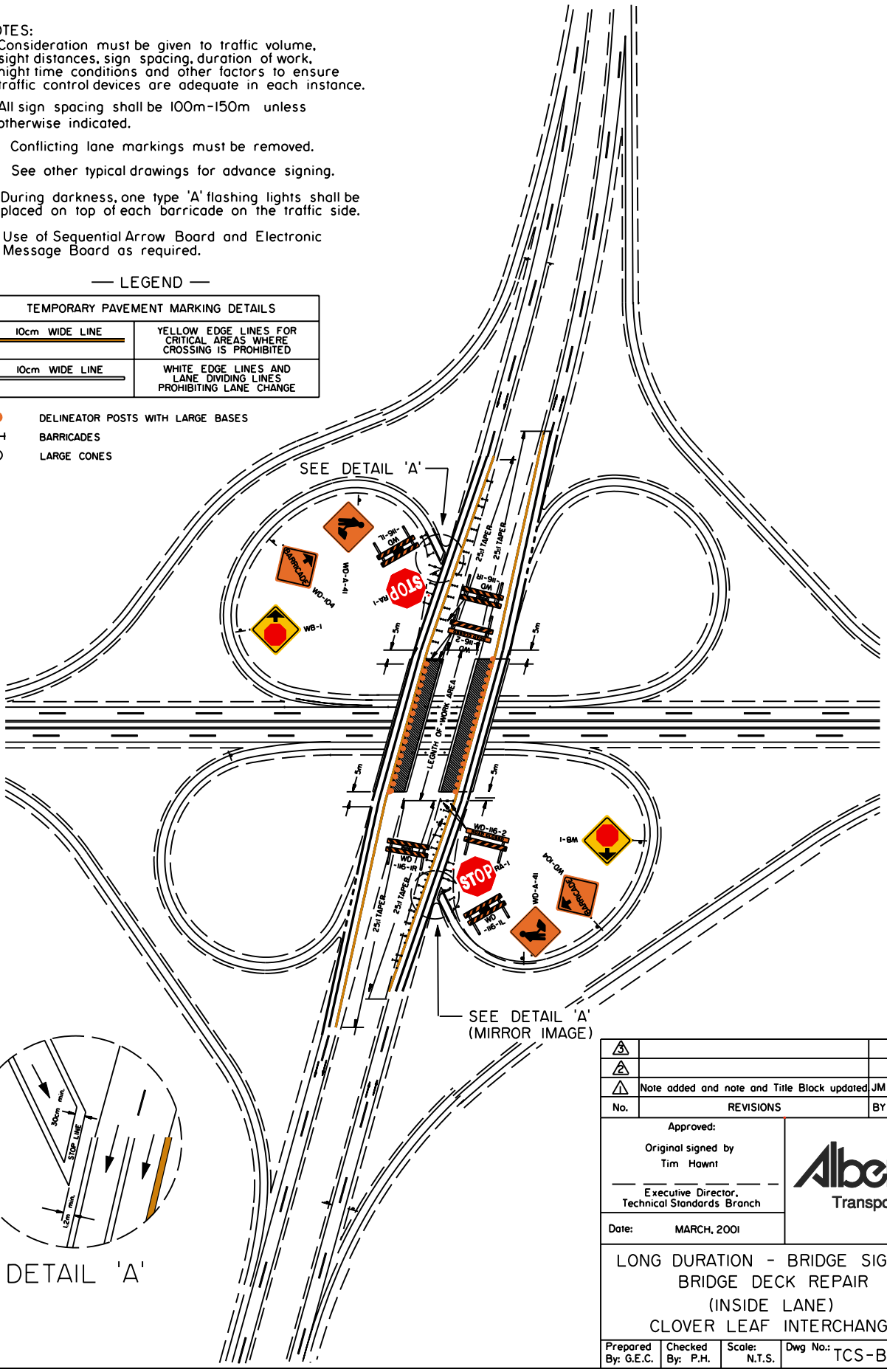
— LEGEND —

TEMPORARY PAVEMENT MARKING DETAILS	
10cm WIDE LINE	YELLOW EDGE LINES FOR CRITICAL AREAS WHERE CROSSING IS PROHIBITED
10cm WIDE LINE	WHITE EDGE LINES AND LANE DIVIDING LINES PROHIBITING LANE CHANGE

DELINEATOR POSTS WITH LARGE BASES

BARRICADES

LARGE CONES



DETAIL 'A'

No.	REVISIONS	BY	DATE
3			
2			
1	Note added and note and Title Block updated	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

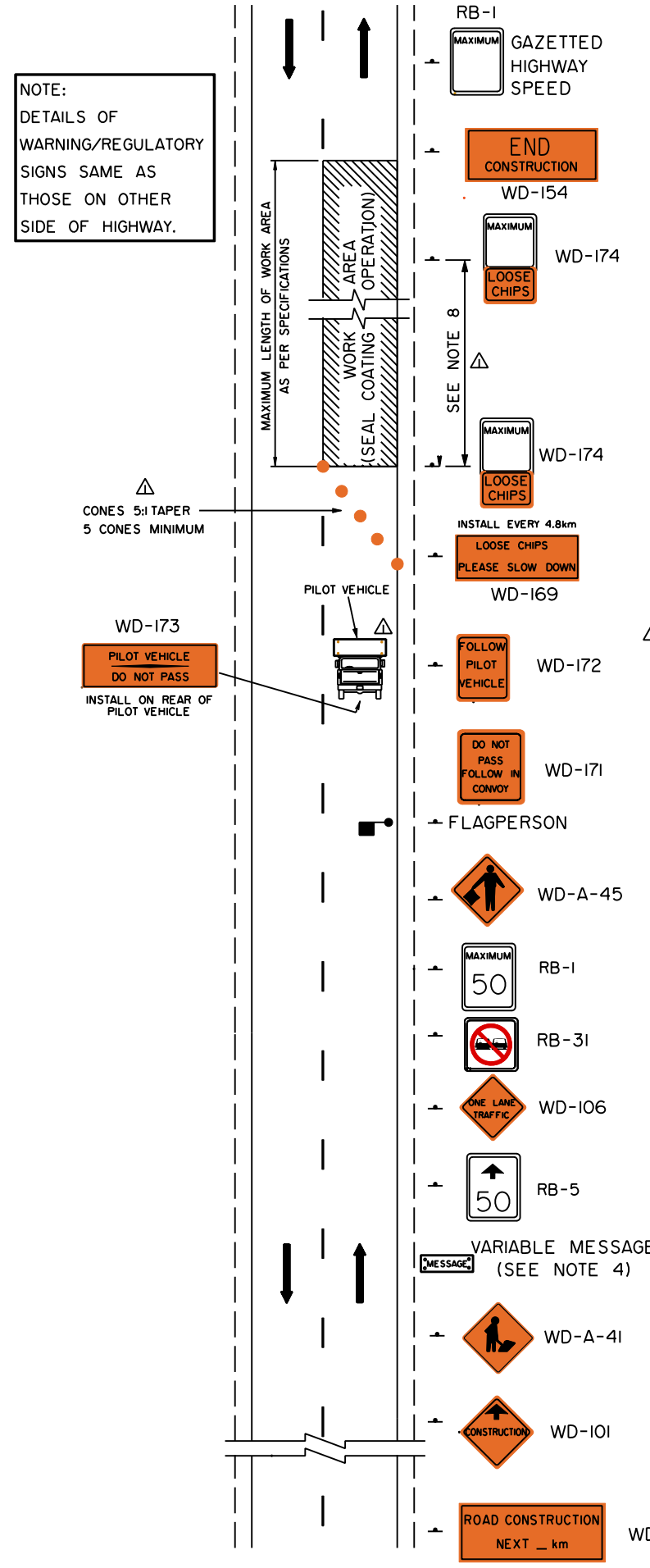
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

LONG DURATION - BRIDGE SIGNING
BRIDGE DECK REPAIR (INSIDE LANE)
CLOVER LEAF INTERCHANGES

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.16B



NOTES:

1. Consideration must be given to traffic volume, direction of travel of seal coating operations, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Typical signing is required in both directions.
4. Variable Message Board should read either "LOOSE CHIPS MAX 50 km/h" or "LOOSE CHIPS PLEASE SLOW DOWN".
5. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.
6. Drawing TCS-B-1.7A applies when construction on the roadway has been completed but barrier lines have not yet been painted.
7. Conditions under which 'MAXIMUM 80km/hr' sign may be used are detailed in the chip seal coat specifications.
8. Speed limit signs shall be placed after every intersecting roadway and shall be no more than 5 km apart.

MAXIMUM / LOOSE CHIPS — BLACK ON WHITE / BLACK ON ORANGE

WD-174 (speed limit shown on WD-174 should be compatible with other speed limit signs used)

No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated, changed Taper to 5:1, pilot vehicle updated and note added.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

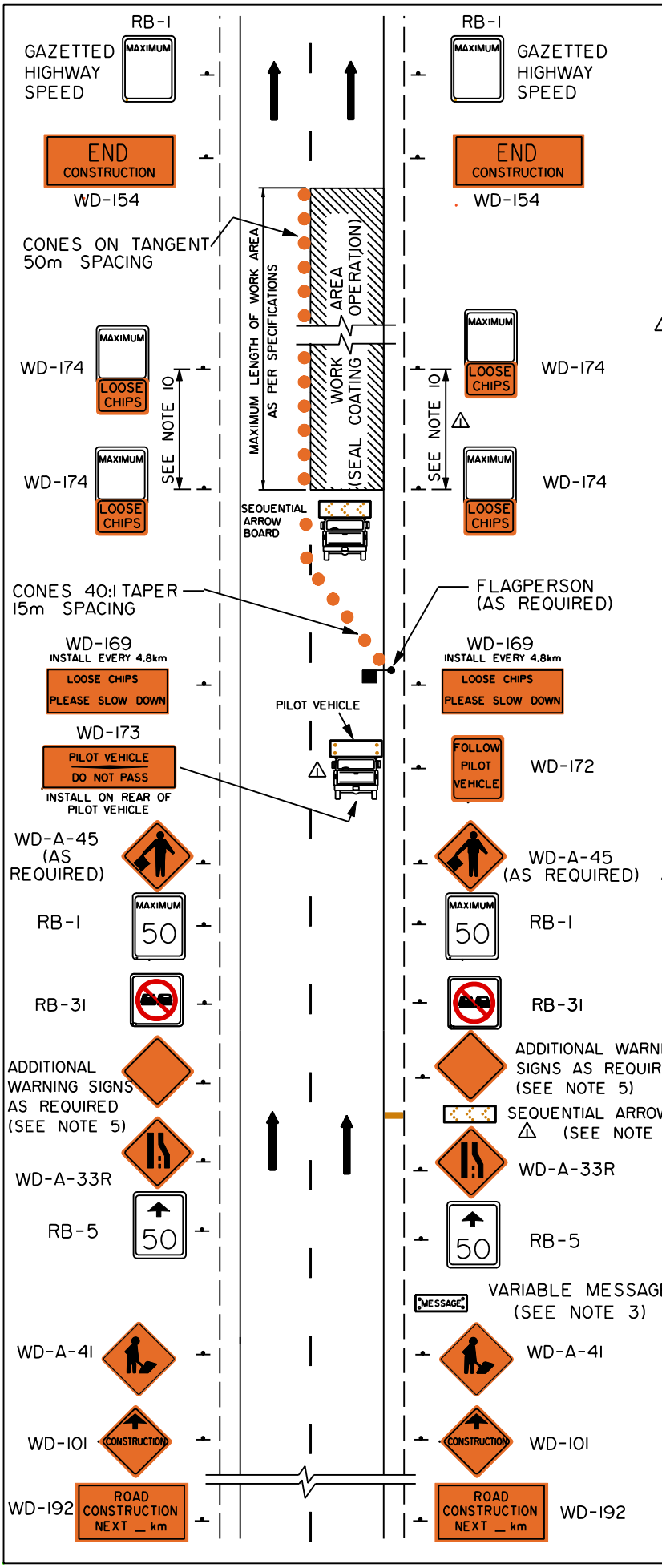
Alberta Transportation

LONG DURATION - SIGNING 1

CHIP SEAL COATING OPERATIONS

TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.17A



NOTES:

1. Consideration must be given to traffic volume, direction of travel of seal coating operations, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Variable Message Board message should read either "LOOSE CHIPS MAX 50 km/h" or "LOOSE CHIPS PLEASE SLOW DOWN".
4. ⚠ An additional Sequential Arrow Board is required when traffic volumes exceed 10000 vehicles per day (ASDT) or when sight distance is restricted.
5. Examples of additional warning signs that may be required in conjunction with this plan are:

6. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.
7. Drawing TCS-B-1.7B applies when construction on the roadway has been completed but barrier lines have not yet been painted.
8. Conditions under which 'MAXIMUM 80km/hr' sign may be used are detailed in the chip seal coat specifications.
9. Cones on tangent may not be required if alternative lane closure methods are utilized.
10. ⚠ Speed limit signs shall be placed after every intersecting roadway and shall be no more than 5 km apart.

BLACK ON WHITE
BLACK ON ORANGE

WD-174 (speed limit shown on WD-174 should be compatible with other speed limit signs used)

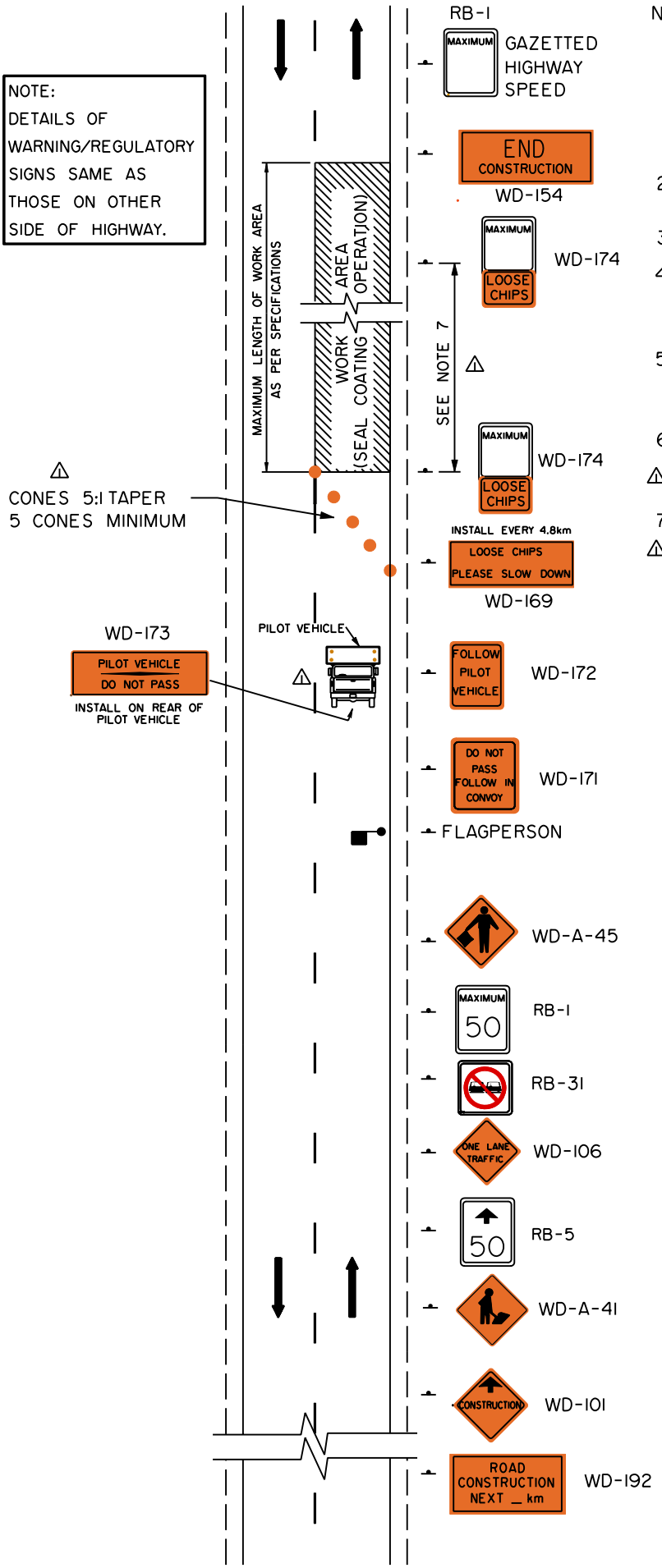
No.	REVISIONS	BY	DATE
3			
2			
1	Note and Title Block updated, pilot vehicle revision and note added.	JM	Dec 31/07

Approved:
Original signed by Tim Hawnt
Executive Director, Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING ⚠
CHIP SEAL COATING OPERATIONS
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.17B



NOTES:

1. Consideration must be given to traffic volume, direction of travel of seal coating operations, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Typical signing is required in both directions.
4. WD-192 shall be erected 2km in advance of the project. Distance tab to include project length plus setback from project limit.
5. Drawing TCS-B-1.7A applies when construction on the roadway has been completed but barrier lines have not yet been painted.
6. Conditions under which 'MAXIMUM 80km/hr' sign may be used are detailed in the double seal coating operations specifications.
7. Speed limit signs shall be placed after every intersecting roadway and shall be no more than 5 km apart.

BLACK ON WHITE

BLACK ON ORANGE

WD-174 (speed limit shown on WD-174 should be compatible with other speed limit signs used)

No.	REVISIONS	BY	DATE
3			
2			
1	Note and Title Block updated, taper changed to 5:1, pilot vehicle revision and note added.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

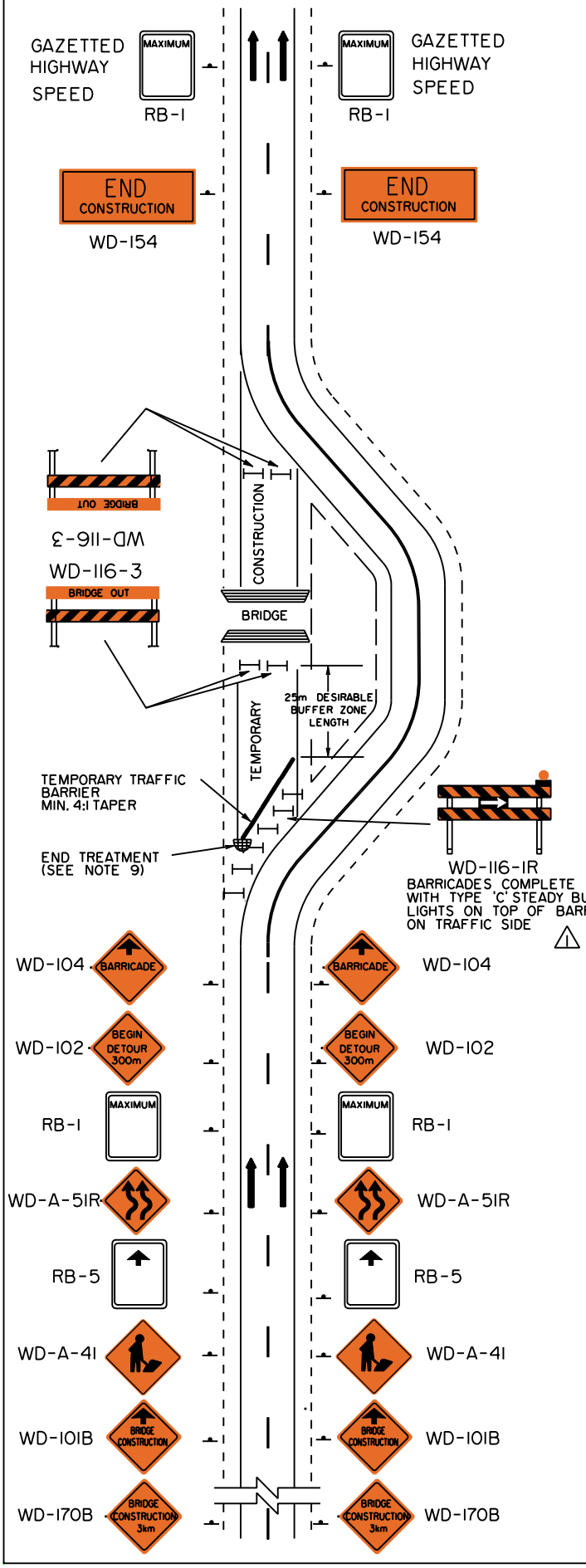
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

LONG DURATION - SIGNING
DOUBLE SEAL AND GRADED AGGREGATE SEAL COATING OPERATIONS
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.18A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Shoulder delineation is required on 8m spacing along the length of the detour (both sides). ⚠1
4. For paved detours, line painting or temporary lane markings are required.
5. For gravel detours, temporary lane markings are required to transition painted line markings from the paved surface.
6. Conflicting lane markings shall be removed.
7. Detour shall be designed and illuminated according to Highway Geometric Design Guide, Section B.7 Temporary Highway Detours.
8. ⚠1 Temporary traffic barriers shall be Approved Continuous Precast Concrete F-shaped Barriers (refer to drawing CB6-4.2 M16) (see Appendix A or approved equivalent) meeting the requirements of NCHRP 350 Test Level 3, with proper consideration for deflection allowance behind barriers. The barriers shall be placed on pavement or properly prepared granular base.
9. ⚠1 The exposed ends of the barriers shall be protected by crashworthy end treatments, such as sand barrels, crash tested for the appropriate speed (Drawing TEB 3.19 see Appendix A), or approved equivalent. Alternatively, the barriers may be terminated outside the clear zone. (Drawing TCS-B-1.29, see Appendix A).

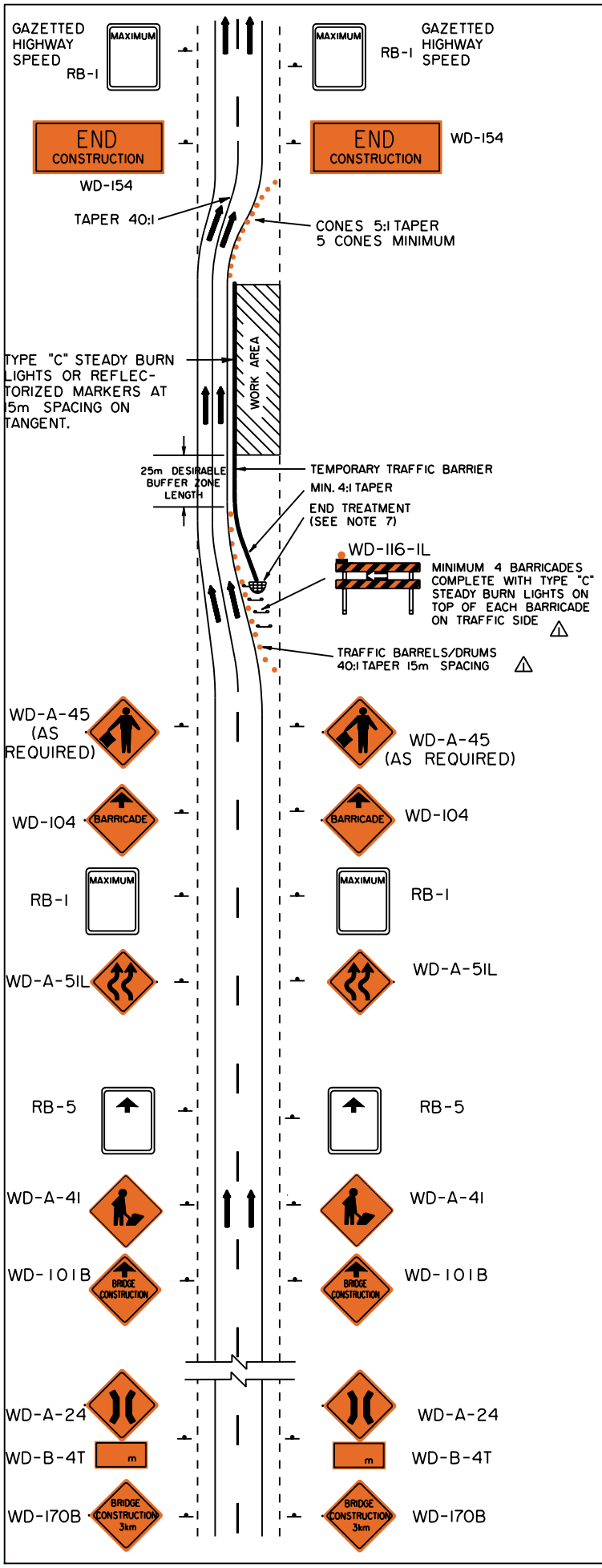
No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Notes and Title Block updated.	JM	Sep 23/08

Approved:
Original Signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE DETOUR SIGNING
(WORK ZONE SPEED > 60 km/h) ⚠1
FOUR LANE DIVIDED HIGHWAY

Prepared By: S.L.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.19B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. When switching traffic during staged construction, a specialized traffic accommodation plan is required.
3. All sign spacing shall be 100m-150m unless otherwise indicated
4. A minimum lane width of 3.5m is required.
5. Temporary lane markings are required and conflicting lane markings shall be removed.
6. Temporary traffic barriers shall be Approved Continuous Precast Concrete F-shaped ⚠ Barriers (refer to drawing CB6-4.2 MI6) (see Appendix A or approved equivalent) meeting the requirements of NCHRP 350 Test Level 3, with proper consideration for deflection allowance behind barriers. The barriers shall be placed on pavement or properly prepared granular base.
7. The exposed ends of the barriers shall be protected by crashworthy end treatments, such as sand barrels, crash tested for the appropriate ⚠ speed (Drawing TEB 3.19 see Appendix A), or approved equivalent. Alternatively, the barriers may be terminated outside the clear zone. (Drawing TCS-B-1.29, see Appendix A)

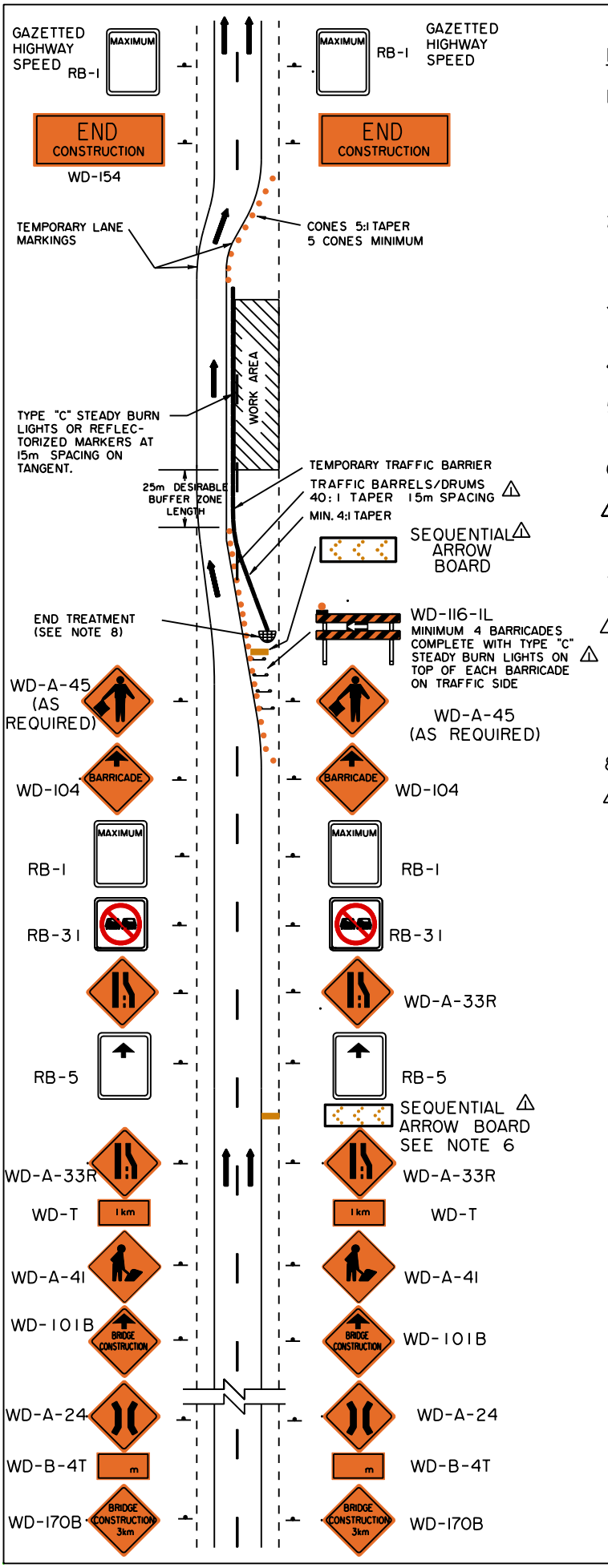
No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Notes and Title Block updated.	JM	Sep 23/08

Approved:
Original Signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE SIGNING ⚠
(WORK ZONE SPEED > 60 km/h OR WORK AREA > 300mm DROP)
TWO LANES TRAFFIC
(REDUCED BRIDGE WIDTH)
FOUR LANE DIVIDED HIGHWAY

Prepared By: S.L.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.20B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. When switching traffic during staged construction, a specialized traffic accommodation plan is required.
3. All sign spacing shall be 100m-150m unless otherwise indicated.
4. A minimum lane width of 3.5m is required.
5. Temporary lane markings are required and conflicting lane markings shall be removed.
6. The Sequential Arrow Board shall be located in the centre of the closed lane. An additional ⚠ Sequential Arrow Board is required when traffic volumes exceed 10000 vehicles per day (ASDT) or when sight distance is restricted.
7. Temporary traffic barriers shall be Approved Continuous Precast Concrete F-shaped ⚠ Barriers (refer to drawing CB6-4.2 M16) (see Appendix A or approved equivalent) meeting the requirements of NCHRP 350 Test Level 3, with proper consideration for deflection allowance behind barriers. The barriers shall be placed on pavement or properly prepared granular base.
8. The exposed ends of the barriers shall be ⚠ protected by crashworthy end treatments, such as sand barrels, crash tested for the appropriate speed (Drawing TEB 3.19 see Appendix A), or approved equivalent. Alternatively, the barriers may be terminated outside the clear zone. (Drawings TCS-B-1.29, see Appendix A)

No.	REVISIONS	BY	DATE
3			
2			
1	Notes and Title Block updated, sign deleted and sign added.	JM	Sep 23/08

Approved:

Original Signed by
Allan Kwan

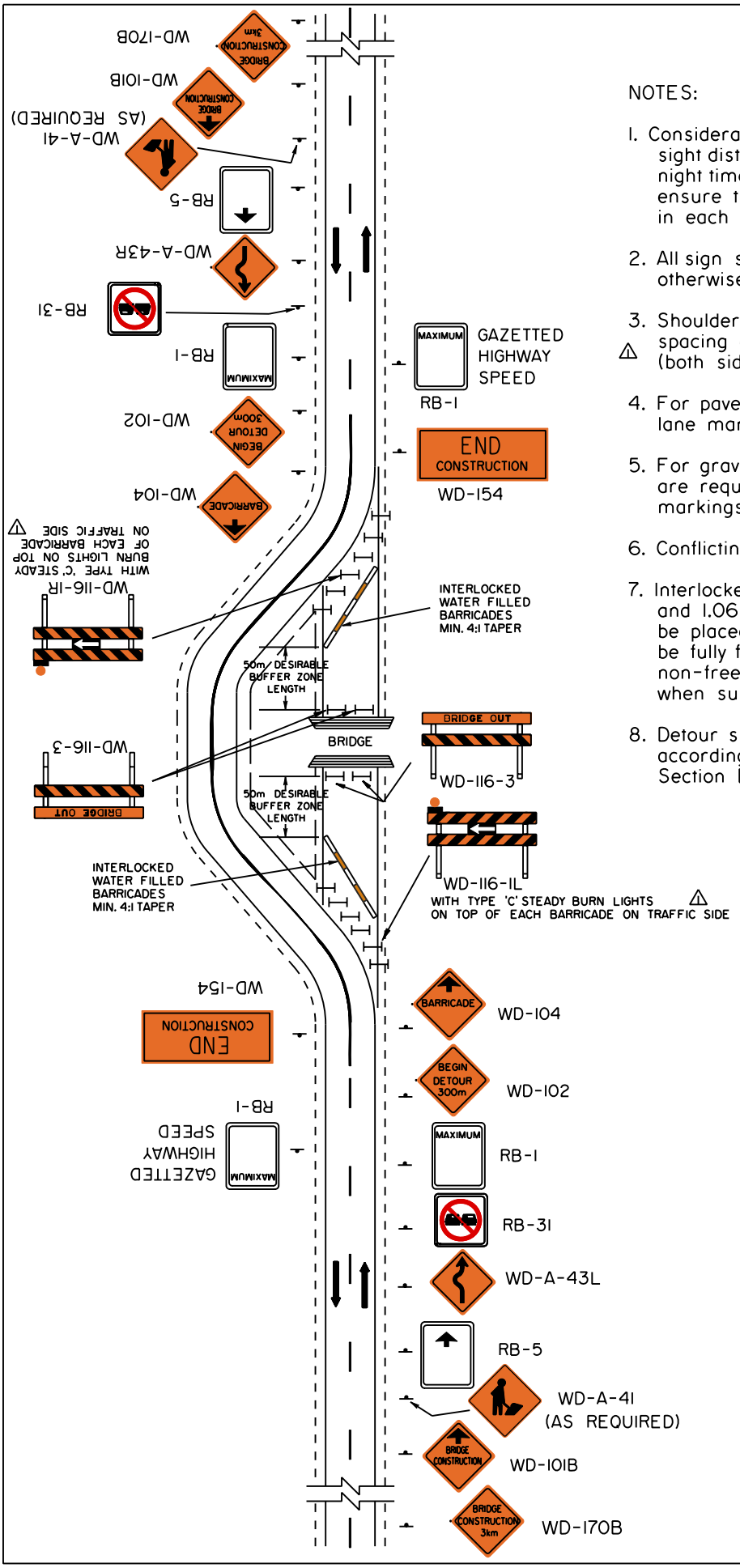
Executive Director,
Technical Standards Branch

Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE SIGNING ⚠
(WORK ZONE SPEED > 60 km/h
OR WORK AREA > 300mm DROP)
ONE LANE CLOSURE
FOUR LANE DIVIDED HIGHWAY

Prepared By: S.L.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.21B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Shoulder delineation is required on 8m spacing along the length of the detour (both sides). ⚠1
4. For paved detours, line painting or temporary lane markings are required.
5. For gravel detours, temporary lane markings are required to transition painted line markings from the paved surface.
6. Conflicting lane markings shall be removed.
7. Interlocked water-filled barricades (1.83m long and 1.06m high) with minimum 4:1 taper shall be placed across the roadway. Barricades shall be fully filled at all times with water or non-freezing ballast of equivalent specific gravity when sub-zero temperature is conceivable.
8. Detour shall be designed and illuminated according to Highway Geometric Design Guide Section B.7 Temporary Highway Detours.

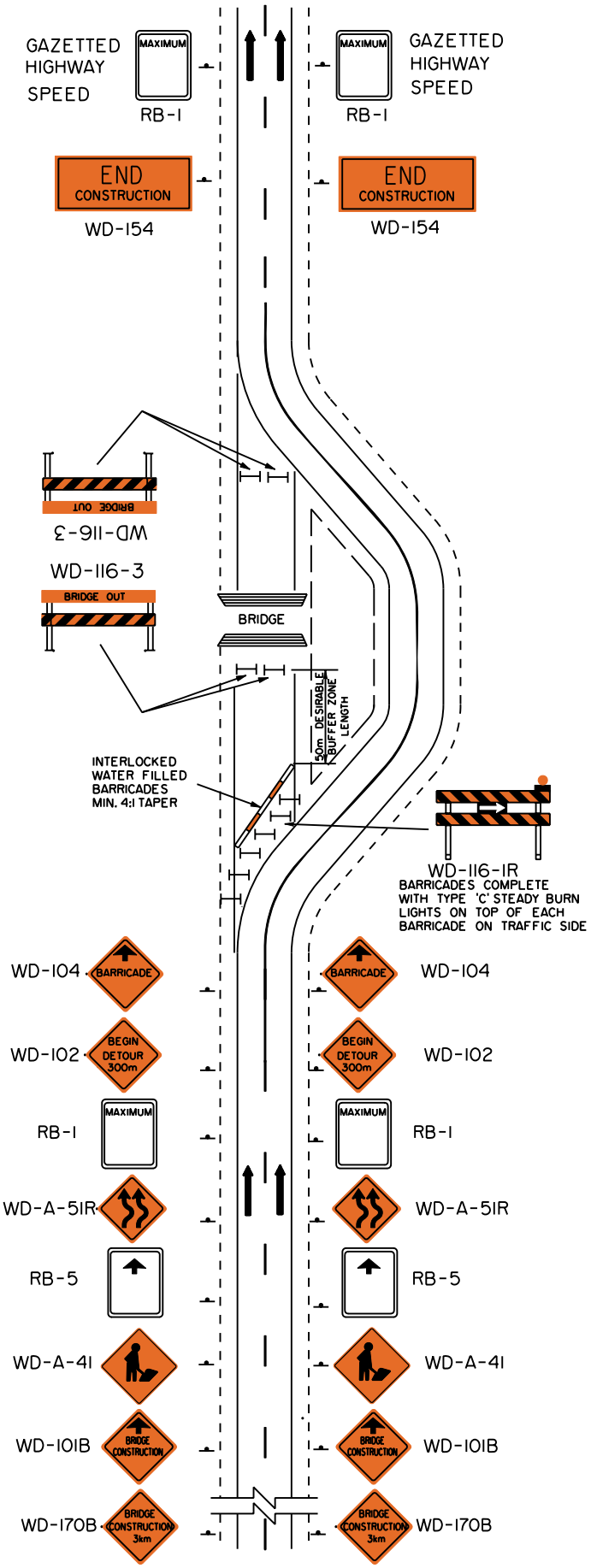
No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Note and Title Block updated.	JM	Dec 31/07

Approved:
Original Signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE DETOUR SIGNING
(WORK ZONE SPEED ≤ 60 km/h) ⚠1
TWO WAY TRAFFIC
TWO LANE UNDIVIDED HIGHWAY

Prepared By: S.L.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.22A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Shoulder delineation is required on 8m spacing along the length of the detour (both sides). ⚠1
4. For paved detours, line painting or temporary line markings are required.
5. For gravel detours, temporary lane markings are required to transition painted line markings from the paved surface.
6. Conflicting lane markings shall be removed.
7. Interlocked water-filled barricades (1.83m long and 1.06m high) with minimum 4:1 taper shall be placed across the roadway. Barricades shall be fully filled at all times with water or non-freezing ballast of equivalent specific gravity when sub-zero temperature is conceivable.
8. Detour shall be designed and illuminated according to Highway Geometric Design Guide Section B.7 Temporary Highway Detours.

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Note and Title Block updated.	JM	Dec 31/07

Approved:

Original Signed by
Allan Kwan

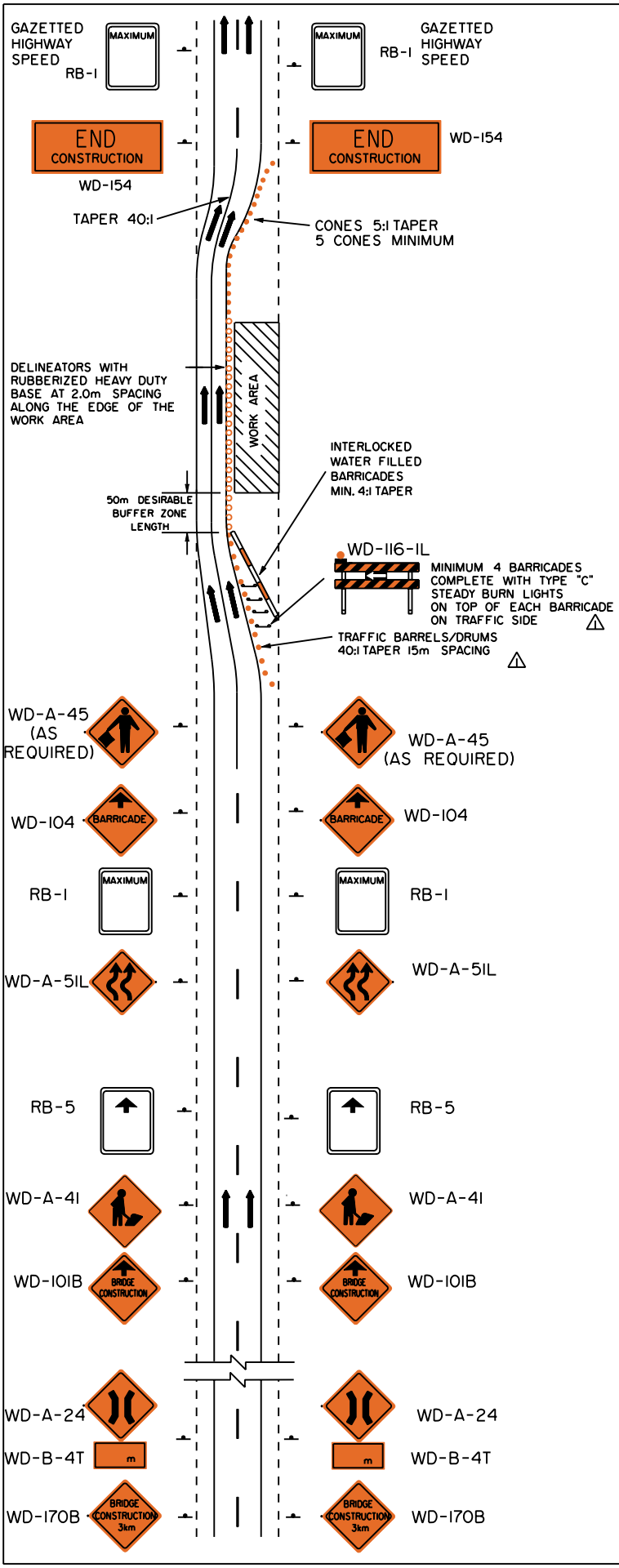
Executive Director,
Technical Standards Branch

Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE DETOUR SIGNING (WORK ZONE SPEED ≤ 60 km/h) ⚠1 FOUR LANE DIVIDED HIGHWAY

Prepared By: S.L.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.23B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. When switching traffic during staged construction, a specialized traffic accommodation plan is required.
3. Interlocked water filled barricades (1.83m long and 1.03m high) with minimum 4:1 taper shall be placed across the roadway. Barricades shall be fully filled at all times with water or non-freezing ballast of equivalent specific gravity when sub-zero temperature is conceivable.
4. All sign spacing shall be 100m-150m unless otherwise indicated.
5. A minimum lane width of 3.5m is required.
6. Temporary lane markings are required and conflicting lane markings shall be removed.

No.	REVISIONS	BY	DATE
3			
2			
1	Notes and Title Block updated.	JM	Dec 31/07

Approved:

Original Signed by
Allan Kwan

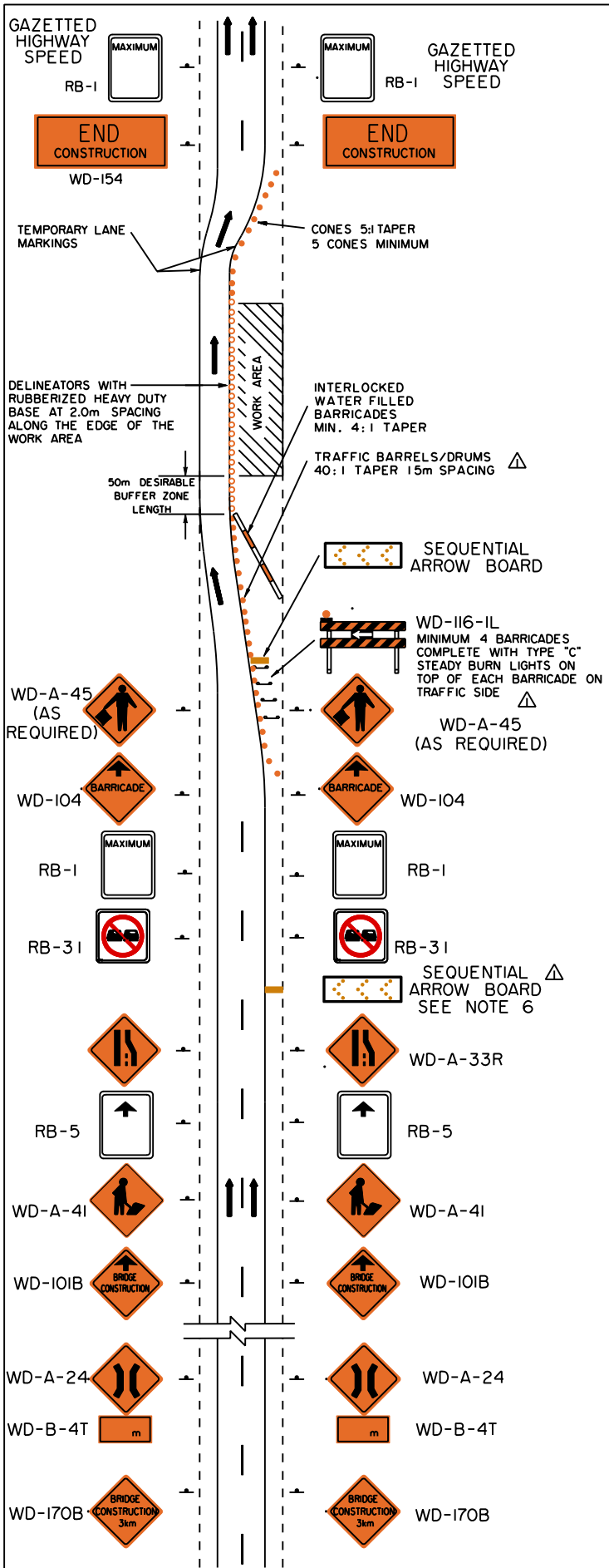
Executive Director,
Technical Standards Branch

Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE SIGNING (WORK ZONE SPEED ≤ 60 km/h AND WORK AREA < 300mm DROP) FOUR LANE DIVIDED HIGHWAY

Prepared By:	Checked By:	Scale:	Dwg No.:
S.L.	J.T.	N.T.S.	TCS-B-1.24B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. Interlocked water-filled barricades (1.83m long and 1.06m high) with minimum 4:1 taper shall be placed across the roadway. Barricades shall be fully filled at all times with water or non-freezing ballast of equivalent specific gravity when sub-zero temperature is conceivable.
3. All sign spacing shall be 100m-150m unless otherwise indicated
4. A minimum lane width of 3.5m is required.
5. Temporary lane markings are required and conflicting lane markings shall be removed.
6. The Sequential Arrow Board shall be located in the centre of the closed lane. An additional Sequential Arrow Board is required when traffic volumes exceed 10000 vehicles per day (ASDT) or when sight distance is restricted.

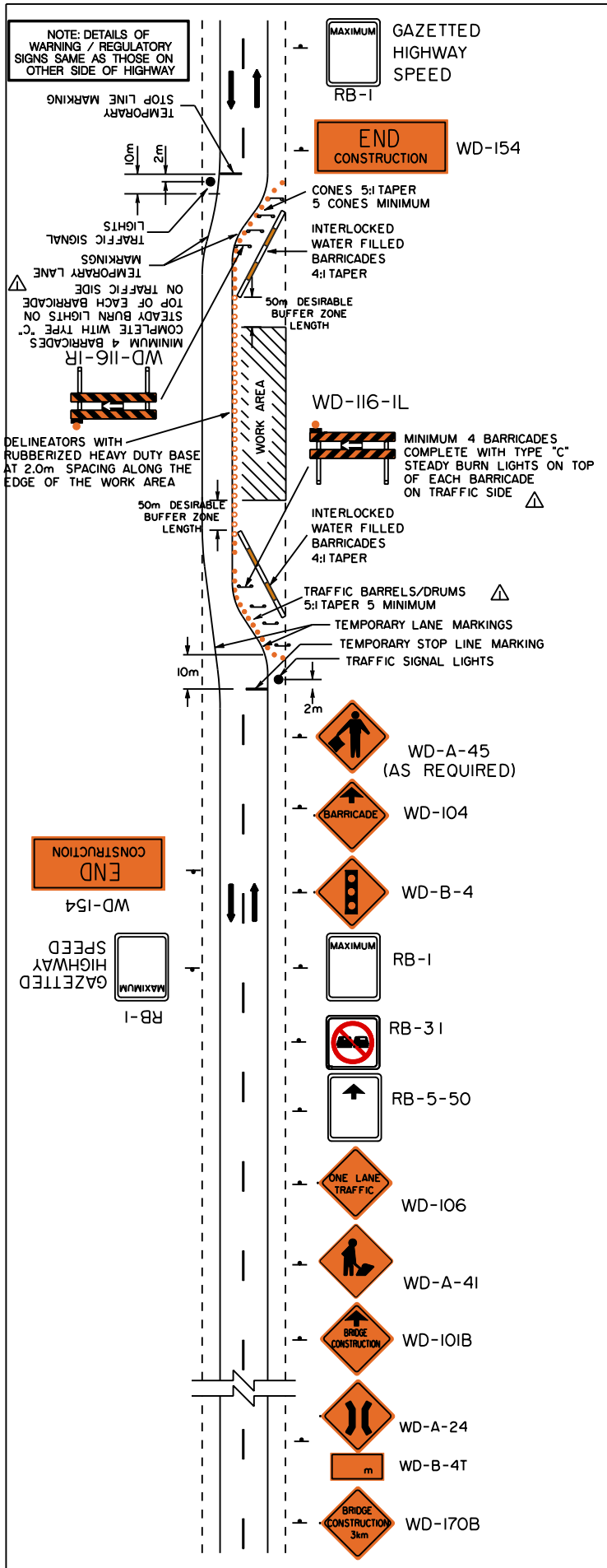
No.	REVISIONS	BY	DATE
3			
2			
1	Note and Title Block updated and sign added	JM	Dec 31/07

Approved:
Original Signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE SIGNING
(WORK ZONE SPEED ≤ 60 km/h AND WORK AREA < 300mm DROP)
ONE LANE CLOSURE
FOUR LANE DIVIDED HIGHWAY

Prepared By: S.L.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.25B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. Interlocked water filled barricades (1.83m long and 1.03m high) with minimum 4:1 taper shall be placed across the roadway. Barricades shall be fully filled at all times with water or non-freezing ballast of equivalent specific gravity when sub-zero temperature is conceivable.
3. All sign spacing shall be 100m-150m unless otherwise indicated
4. Traffic signal lights shall be 300mm diameter.
5. A minimum lane width of 3.5m is required.

No.	REVISIONS	BY	DATE
3			
2			
1	Notes and Title Block Updated, cones replaced by Barrels/drums	JM	Dec 31/07

Approved:

Original Signed by
Allan Kwan

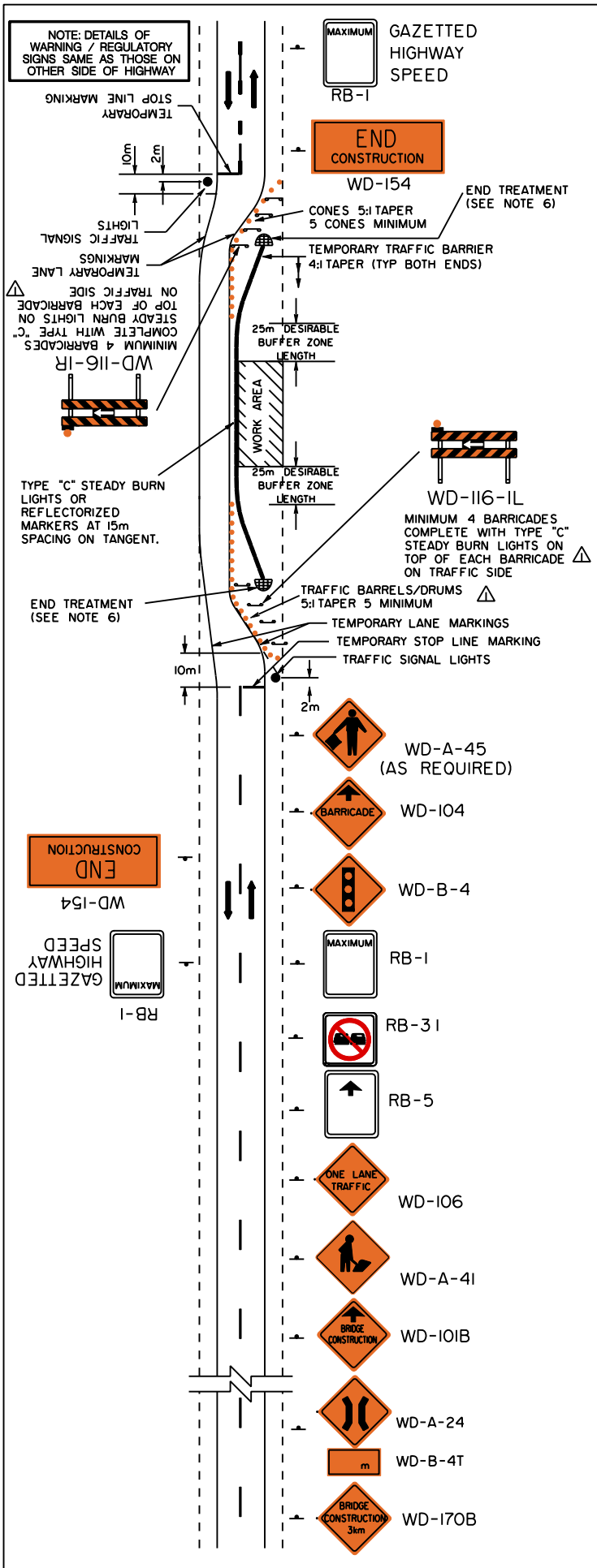
Executive Director,
Technical Standards Branch

Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE SIGNING (WORK ZONE SPEED ≤ 60 km/h AND WORK AREA < 300mm DROP) (ONE LANE ALTERNATING TRAFFIC) TWO LANE UNDIVIDED HIGHWAY

Prepared By: S.L.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.26A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated
3. Traffic signal lights shall be 300mm diameter.
4. A minimum lane width of 3.5m is required.
5. Temporary traffic barriers shall be Approved Continuous Precast Concrete F-shaped ⚠ Barriers (refer to drawing CB6-4.2 M16) (see Appendix A or approved equivalent) meeting the requirements of NCHRP 350 Test Level 3, with proper consideration for deflection allowance behind barriers. The barriers shall be placed on pavement or properly prepared granular base.
6. The exposed ends of the barriers shall be ⚠ protected by crashworthy end treatments, such as sand barrels, crash tested for the appropriate speed (Drawing TEB 3.19 see Appendix A), or approved equivalent. Alternatively, the barriers may be terminated outside the clear zone. (Drawing TCS-B-1.28 see Appendix A)

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Notes and Title Block Updated, cones replaced by Barrels/drums	JM	Sep 23/08

Approved:
Original Signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: JANUARY 2005

Alberta Transportation

LONG DURATION - BRIDGE SIGNING ⚠
(WORK ZONE SPEED ≤ 60 km/h AND WORK AREA > 300mm DROP) (ONE LANE ALTERNATING TRAFFIC) TWO LANE UNDIVIDED HIGHWAY

Prepared By:	Checked By:	Scale:	Dwg No.:
S.L.	J.T.	N.T.S.	TCS-B-1.27A

NOTES:

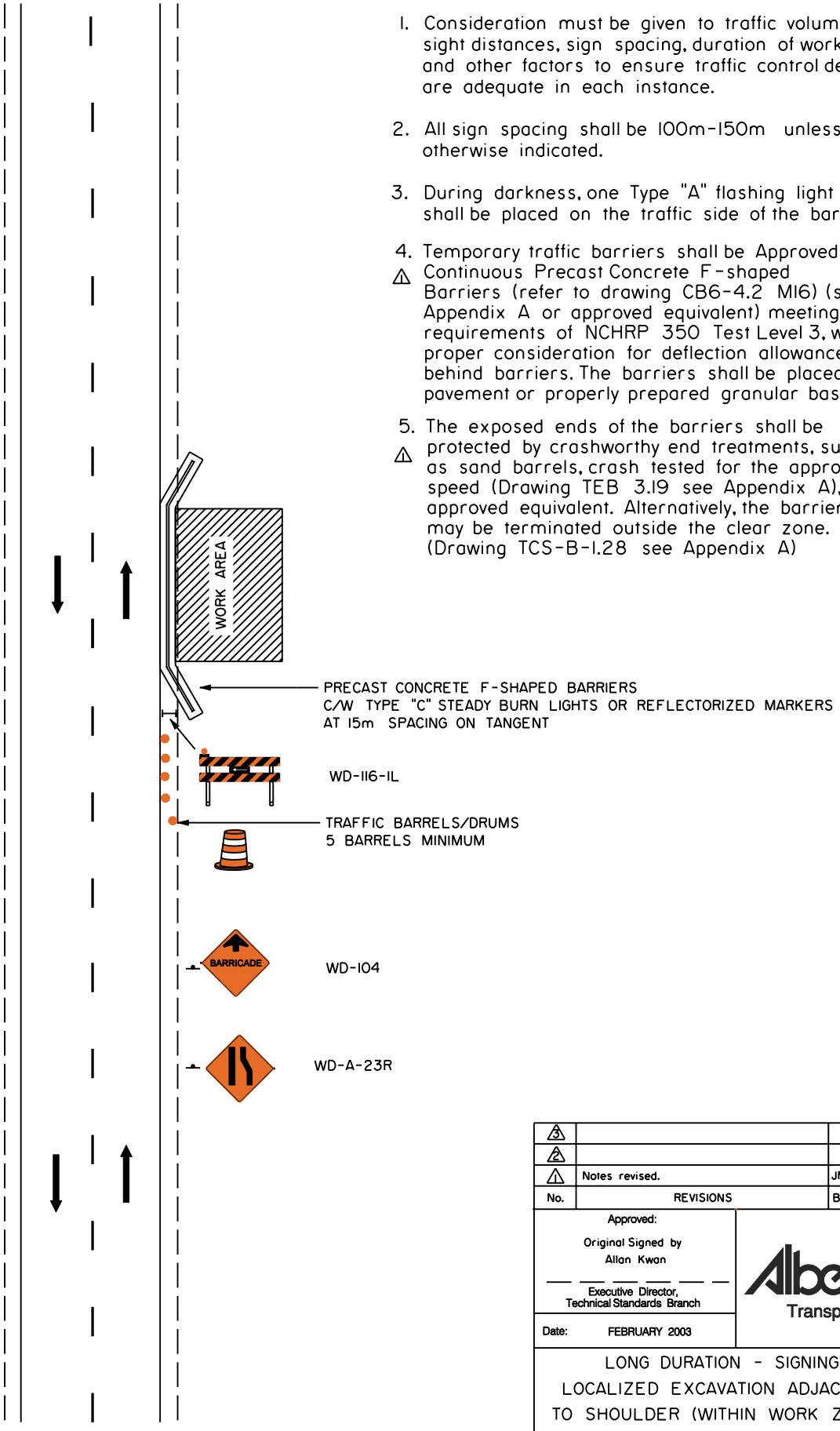
1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

3. During darkness, one Type "A" flashing light shall be placed on the traffic side of the barricade.

4. Temporary traffic barriers shall be Approved Continuous Precast Concrete F-shaped Barriers (refer to drawing CB6-4.2 MI6) (see Appendix A or approved equivalent) meeting the requirements of NCHRP 350 Test Level 3, with proper consideration for deflection allowance behind barriers. The barriers shall be placed on pavement or properly prepared granular base.

5. The exposed ends of the barriers shall be protected by crashworthy end treatments, such as sand barrels, crash tested for the appropriate speed (Drawing TEB 3.19 see Appendix A), or approved equivalent. Alternatively, the barriers may be terminated outside the clear zone. (Drawing TCS-B-1.28 see Appendix A)



No.	REVISIONS	BY	DATE
3			
2			
1	Notes revised.	JM	Sep 23/08

Approved:

Original Signed by
Allan Kwan

Executive Director,
Technical Standards Branch

Date: FEBRUARY 2003

Alberta Transportation

LONG DURATION - SIGNING
LOCALIZED EXCAVATION ADJACENT TO SHOULDER (WITHIN WORK ZONE) TWO LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-1.28A

NOTES:

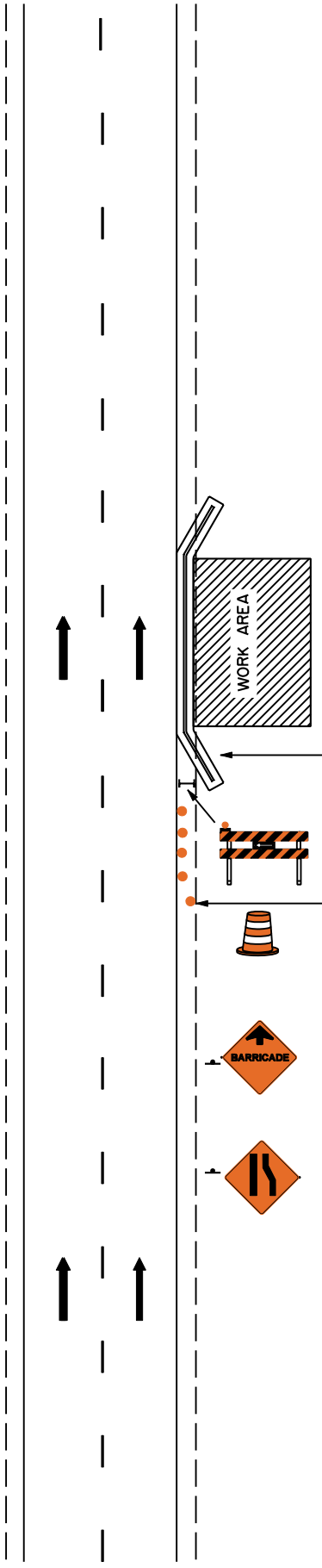
1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

3. During darkness, one Type "A" flashing light shall be placed on the traffic side of the barricade.

4. Temporary traffic barriers shall be Approved Continuous Precast Concrete F-shaped Barriers (refer to drawing CB6-4.2 M16) (see Appendix A or approved equivalent) meeting the requirements of NCHRP 350 Test Level 3, with proper consideration for deflection allowance behind barriers. The barriers shall be placed on pavement or properly prepared granular base.

5. The exposed ends of the barriers shall be protected by crashworthy end treatments, such as sand barrels, crash tested for the appropriate speed (Drawing TEB 3.19 see Appendix A), or approved equivalent. Alternatively, the barriers may be terminated outside the clear zone. (Drawing TCS-B-1.29, see Appendix A)



PRECAST CONCRETE F-SHAPED BARRIERS
C/W TYPE "C" STEADY BURN LIGHTS OR REFLECTORIZED MARKERS
AT 15m SPACING ON TANGENT

WD-116-1L

TRAFFIC BARRELS/DRUMS
5 BARRELS MINIMUM

WD-104

WD-A-23R

No.	REVISIONS	BY	DATE
3			
2			
1	Notes revised.	JM	Sep 23/08

Approved:
Original Signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: FEBRUARY 2003

Alberta Transportation

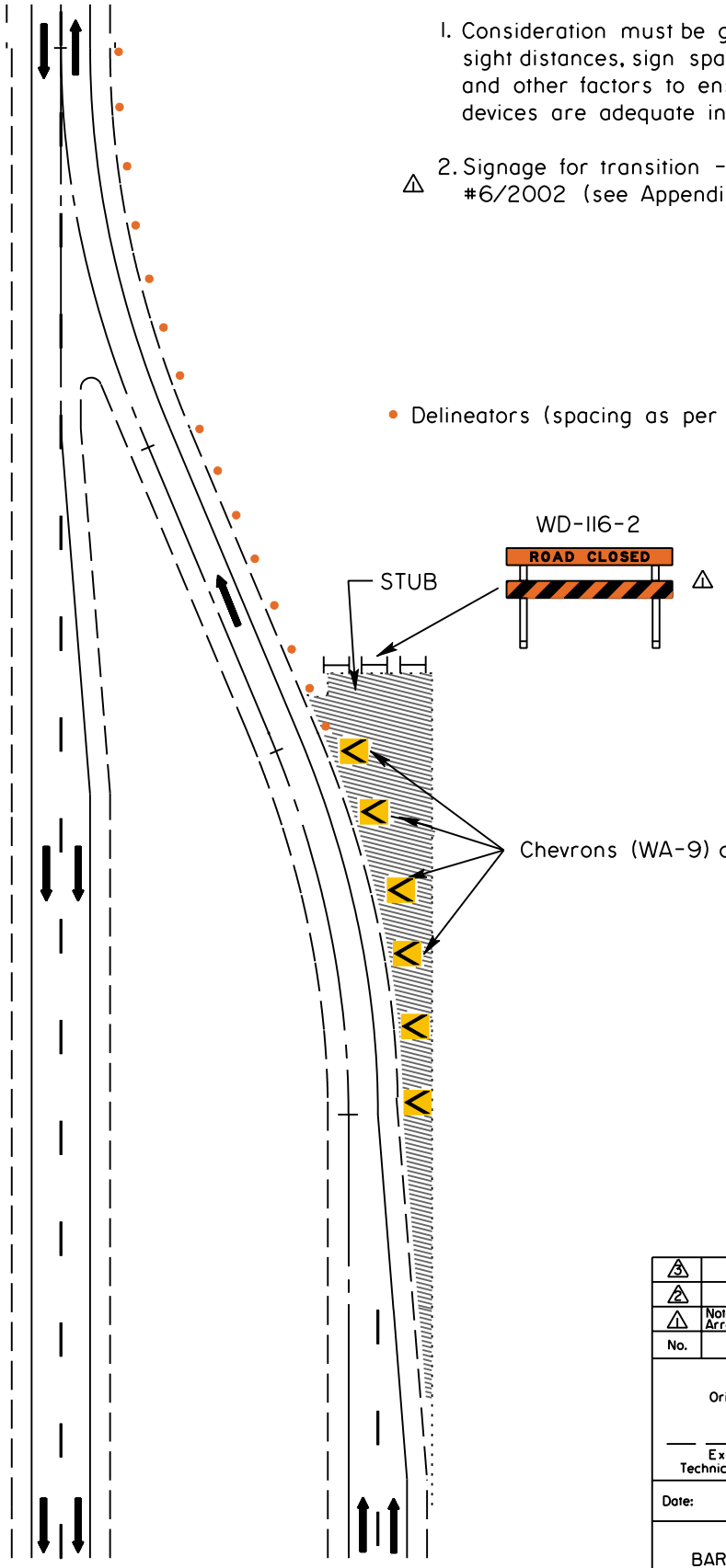
LONG DURATION - SIGNING
LOCALIZED EXCAVATION ADJACENT
TO SHOULDER (WITHIN WORK ZONE)
FOUR LANE DIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-1.28B

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.

⚠ 2. Signage for transition - refer to Design Bulletin #6/2002 (see Appendix A).



No.	REVISIONS	BY	DATE
3			
2			
⚠ 1	Notes and Title Block updated and Arrow eliminated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

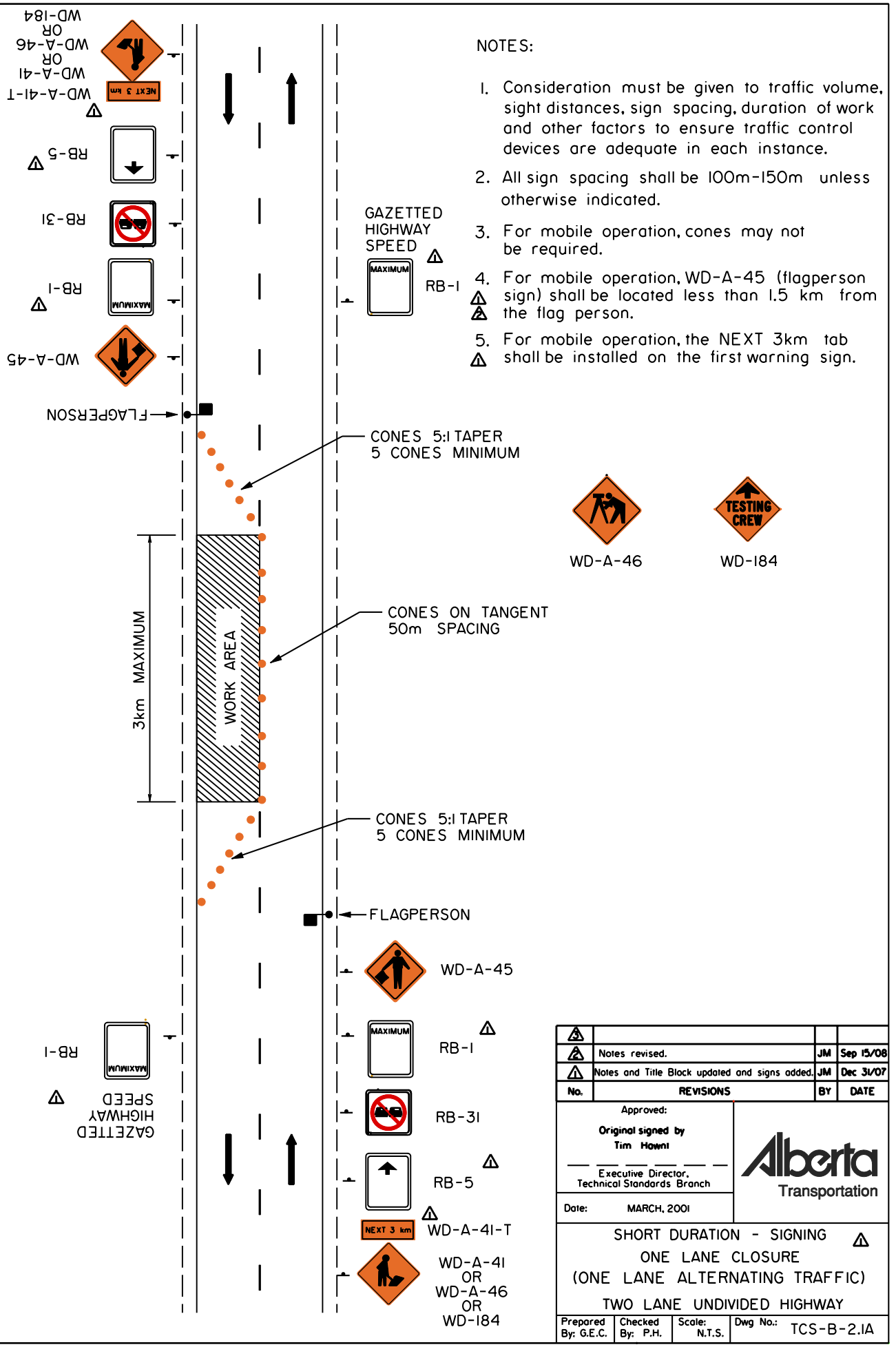
LONG DURATION- SIGNING ⚠
BARRICADE/DELINEATOR CONFIGURATION
HIGHWAY TRANSITION FROM FOUR LANE
DIVIDED TO TWO LANE UNDIVIDED
(WITH TEMPORARY STUB)

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-1.29B

TRAFFIC ACCOMMODATION IN WORK ZONES

LIST OF DRAWINGS

SHORT DURATION			
TCS-B Drawing No.	**2 Lane Undivided Highway**	**4 or 6 Lane Divided Highway**	**Description**
2.1A	X		One Lane Closure (One Lane Alternating Traffic)
2.1B		X	One Lane Closure
2.2A	X		Work on Shoulder
2.2B		X	Work on Shoulder
2.3A	X		Work off Road Surface
2.3B		X	Work off Road Surface
2.4B		X	Centre and Right Lane Closure Repair/Survey/Testing/Inspection Crews
2.5B		X	Right Lane Closure Repair/Survey/Testing/Inspection Crews
2.6A	X		Road Top Shaping
2.7A	X		Work on Centreline
2.8B		X	Temporary Detour Transition



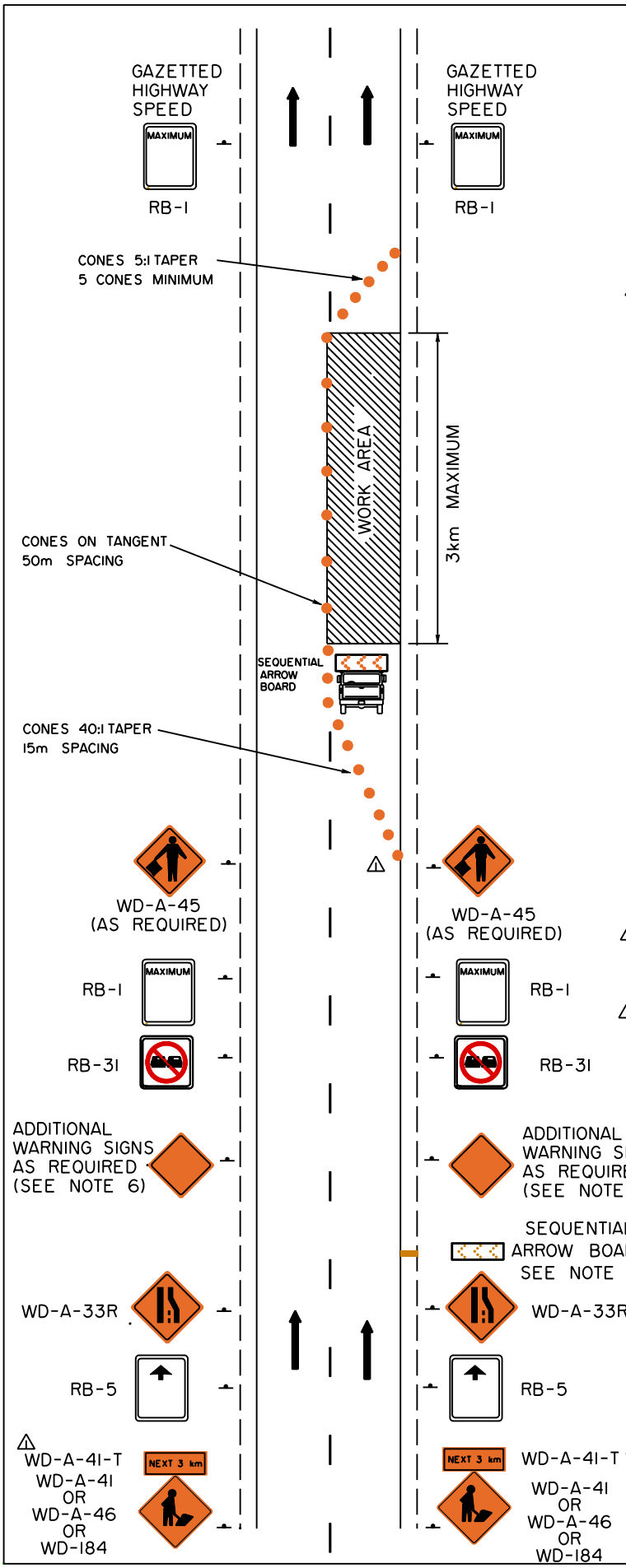
No.	REVISIONS	BY	DATE
3			
2	Notes revised.	JM	Sep 15/08
1	Notes and Title Block updated and signs added.	JM	Dec 31/07

Approved:
Original signed by Tim Hawn
Executive Director, Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

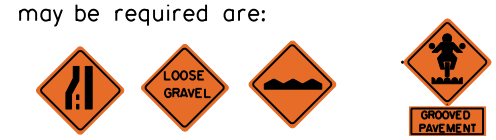
SHORT DURATION - SIGNING
ONE LANE CLOSURE
(ONE LANE ALTERNATING TRAFFIC)
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.1A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. For mobile operation, cones may not be required.
4. ⚠ The Sequential Arrow Board shall be located in the centre of the closed lane. An additional Sequential Arrow Board is required when traffic volume exceeds 10000 vehicles per day (ASDT) or when sight distance is restricted. The additional Sequential Arrow Board shall be located after the lane closure sign.
5. If construction operation is occurring on the opposite travel lane, then applicable construction signing will also be required on those lanes.
6. Examples of additional warning signs that may be required are:



WD-A-33L WD-150 WD-A-22 WD-A-111

WD-104 WD-A-49 WD-A-100 WD-157

7. Other hazard signs as shown in the schedule of signs may be used as required.
8. ⚠ For mobile operation, WD-A-45 (Flagperson sign) shall be located less than 1.5 km from the Flagperson.
9. ⚠ For mobile operation, the NEXT 3KM tab shall be installed on the first warning sign.

WD-A-46 WD-184

No.	REVISIONS	BY	DATE
3			
2			
1	Notes and Title Block updated and signs added	JM	Sep 23/08

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

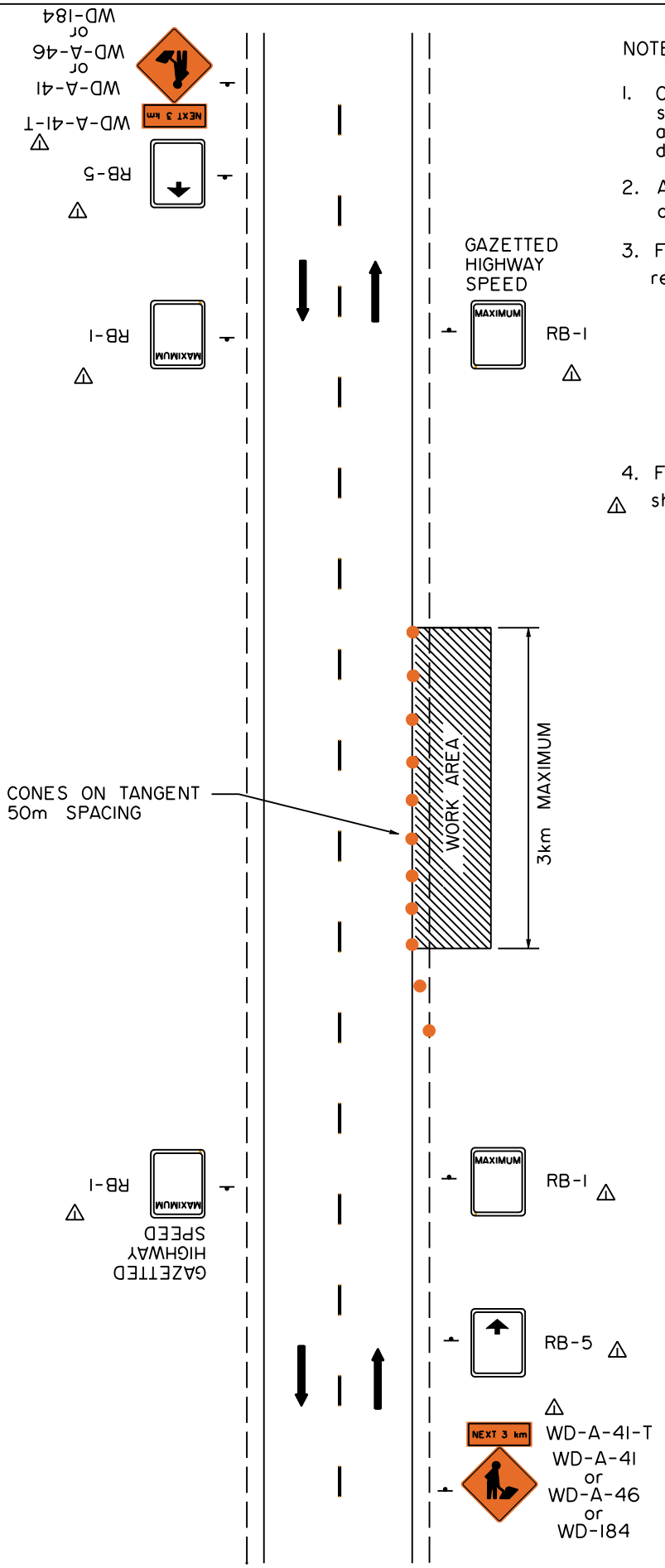
Alberta Transportation

SHORT DURATION - SIGNING ⚠

ONE LANE CLOSURE

FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.1B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. For mobile operation, cones may not be required.

WD-A-46

WD-184

4. For mobile operation, the NEXT 3KM tab shall be installed on the first warning sign.

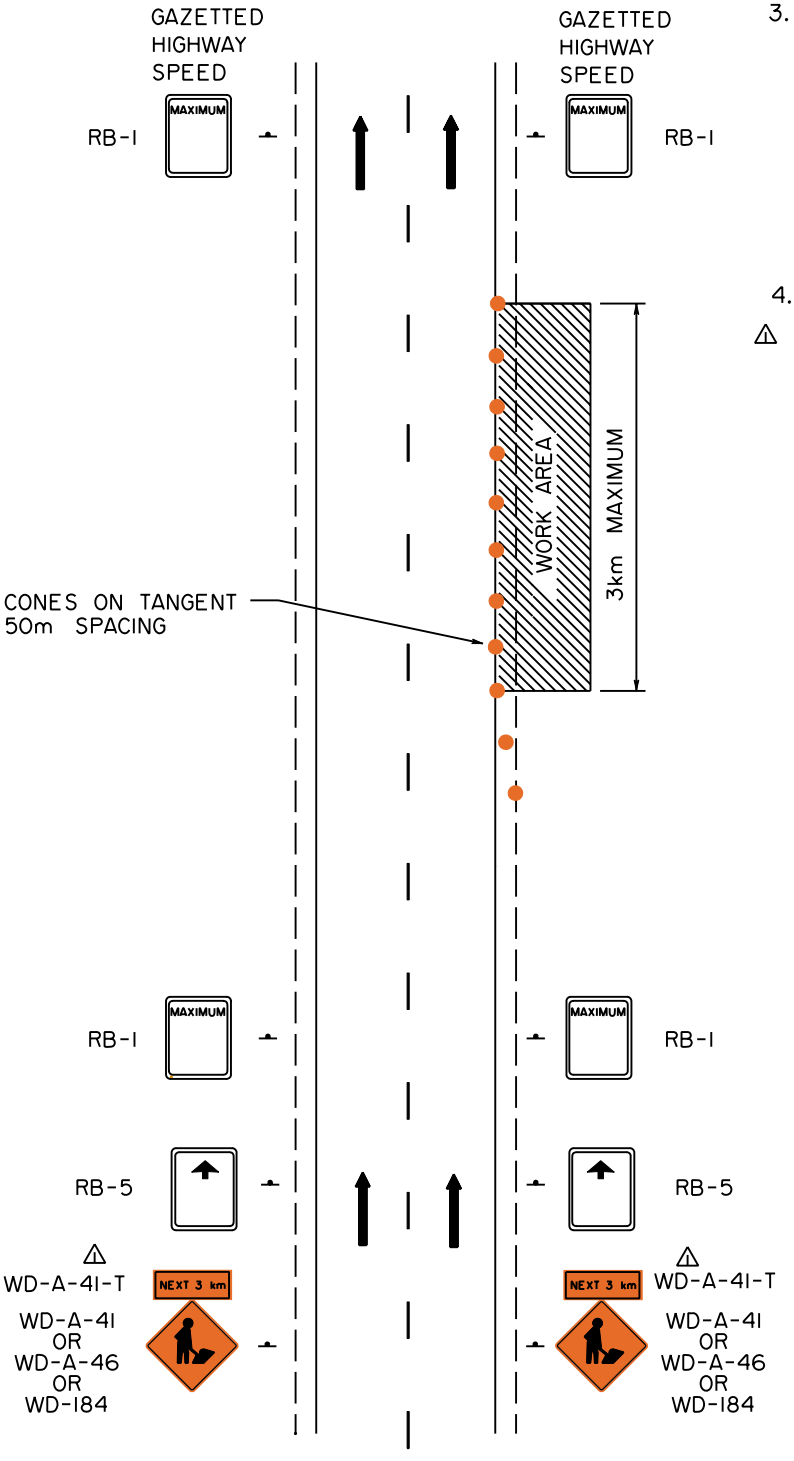
No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated, note added and signs added.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
WORK ON SHOULDER
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.2A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. For mobile operation, cones may not be required.

WD-A-46

WD-184

4. For mobile operation, the NEXT 3KM tab shall be installed on the first warning sign. ⚠

No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated, note added and signs added.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

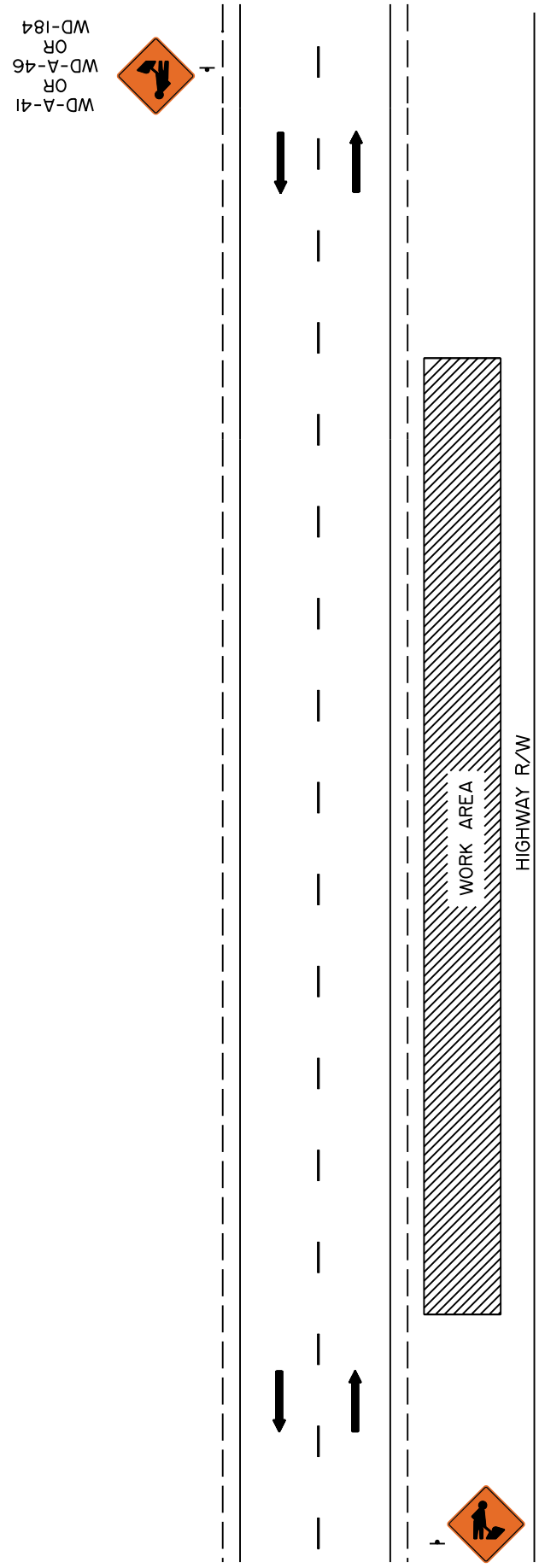
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING ⚠
WORK ON SHOULDER
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.2B



NOTES:

1. No vehicle shall be parked on the road surface.
2. ⚠1 If the work is entirely off the road surface, signs may not be required.

WD-A-46

WD-184

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Note added, and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

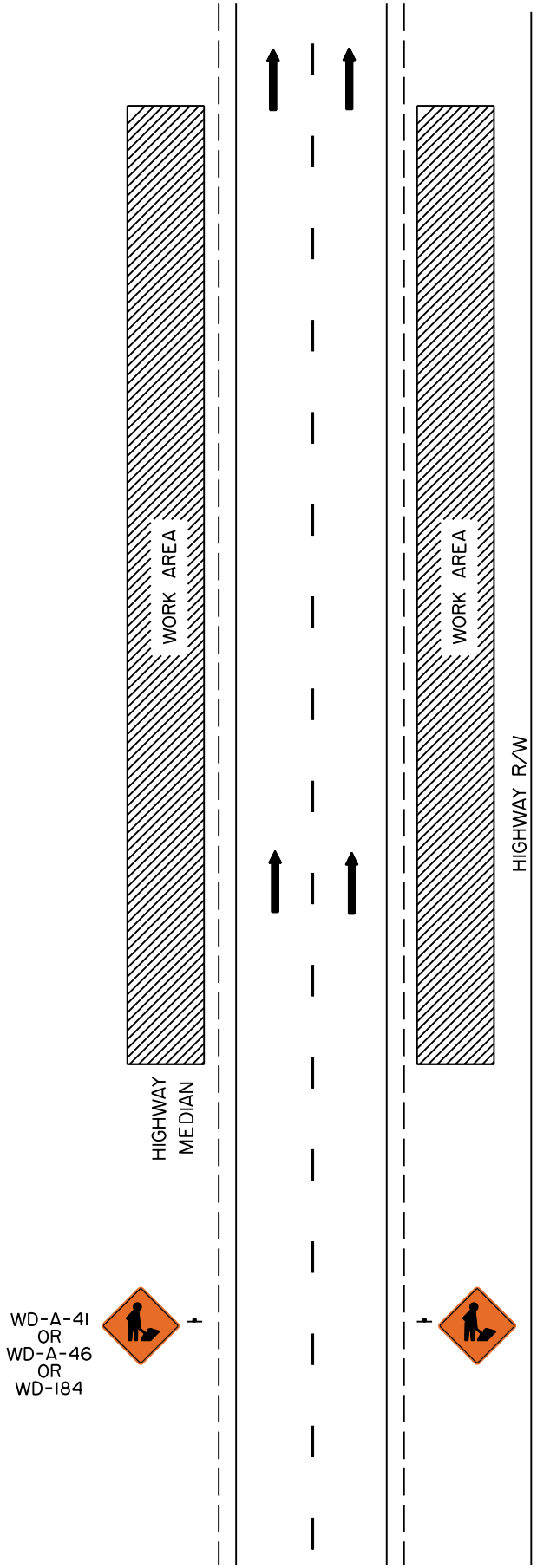
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
WORK OFF ROAD SURFACE
TWO LANE UNDIVIDED HIGHWAY ⚠1

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.3A



NOTE:

1. No vehicle shall be parked on the road surface.
2. If the work is entirely off the road surface, signs may not be required. ⚠1

WD-A-46

WD-184

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Note added and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

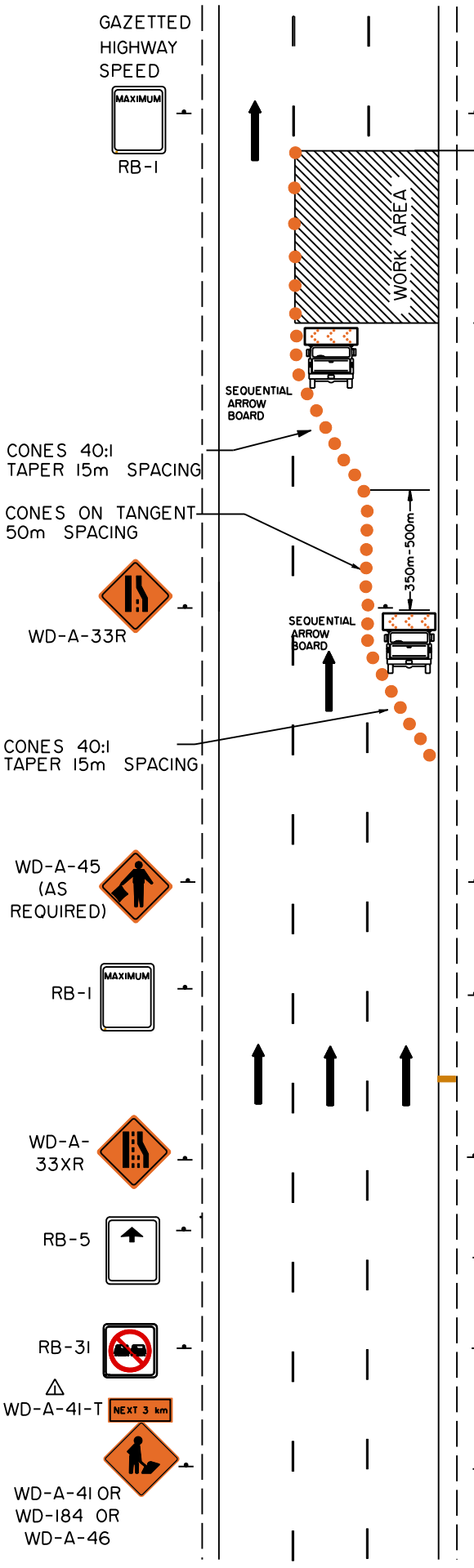
Executive Director,
Technical Standards Branch

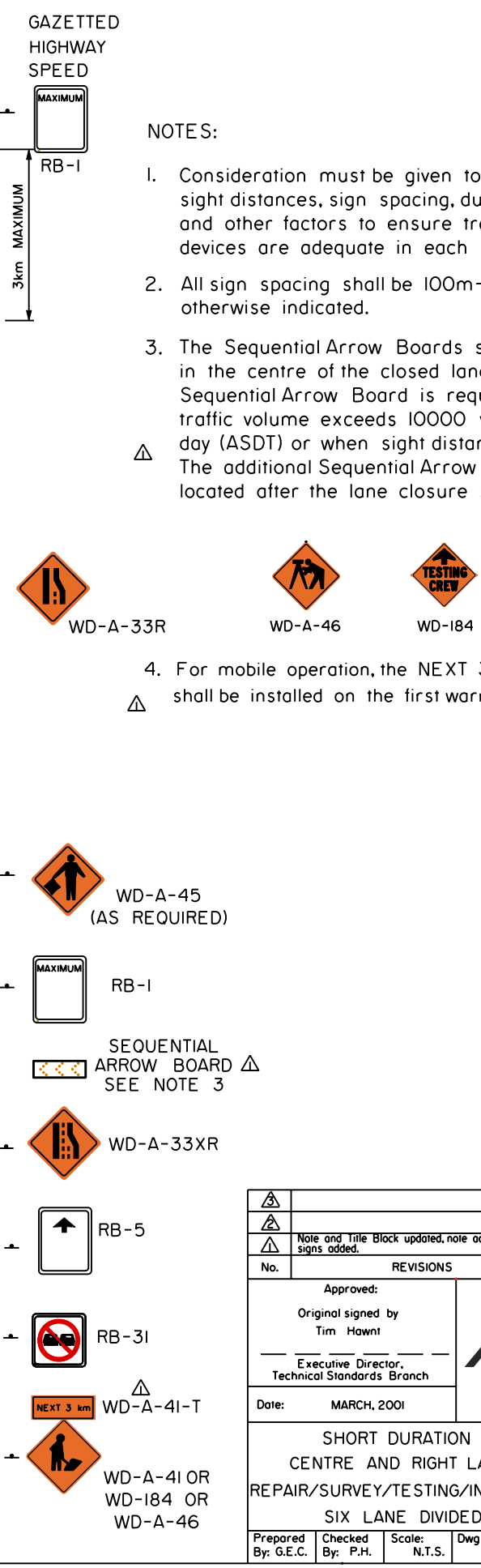
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
WORK OFF ROAD SURFACE
FOUR LANE DIVIDED HIGHWAY ⚠1

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.3B





NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. The Sequential Arrow Boards shall be located in the centre of the closed lanes. An additional Sequential Arrow Board is required when traffic volume exceeds 10000 vehicles per day (ASDT) or when sight distance is restricted. The additional Sequential Arrow Board shall be located after the lane closure sign.
4. For mobile operation, the NEXT 3KM tab shall be installed on the first warning sign.

No.	REVISIONS	BY	DATE
3			
2			
1	Note and Title Block updated, note added and signs added.	JM	Dec 31/07

Approved:

Original signed by Tim Hawnt

Executive Director, Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

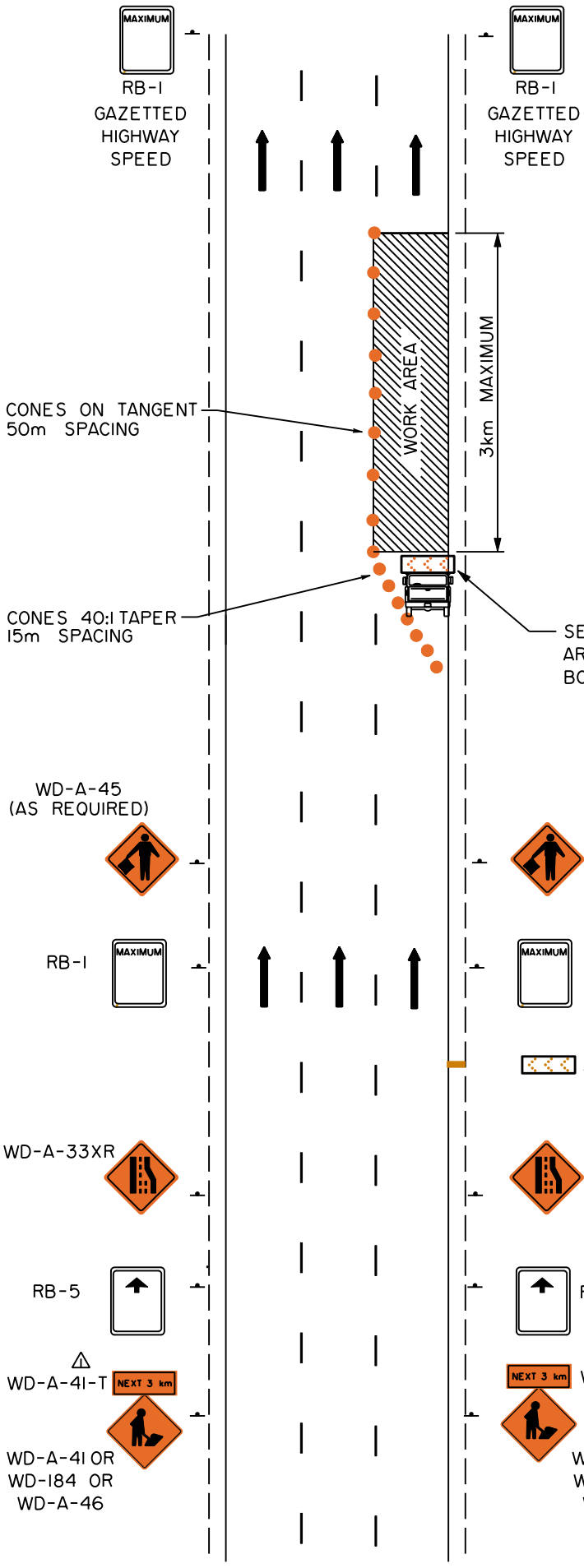
SHORT DURATION - SIGNING 1

CENTRE AND RIGHT LANE CLOSURE

REPAIR/SURVEY/TESTING/INSPECTION CREWS

SIX LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.4B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. The Sequential Arrow Board shall be located in the centre of the closed lane. An additional Sequential Arrow Board is required when traffic volume exceeds 10000 vehicles per day (ASDT) or when sight distance is restricted. The additional Sequential Arrow Board shall be located after the lane closure sign.

WD-A-46

WD-184

4. For mobile operation, the NEXT 3KM tab shall be installed on the first warning sign.

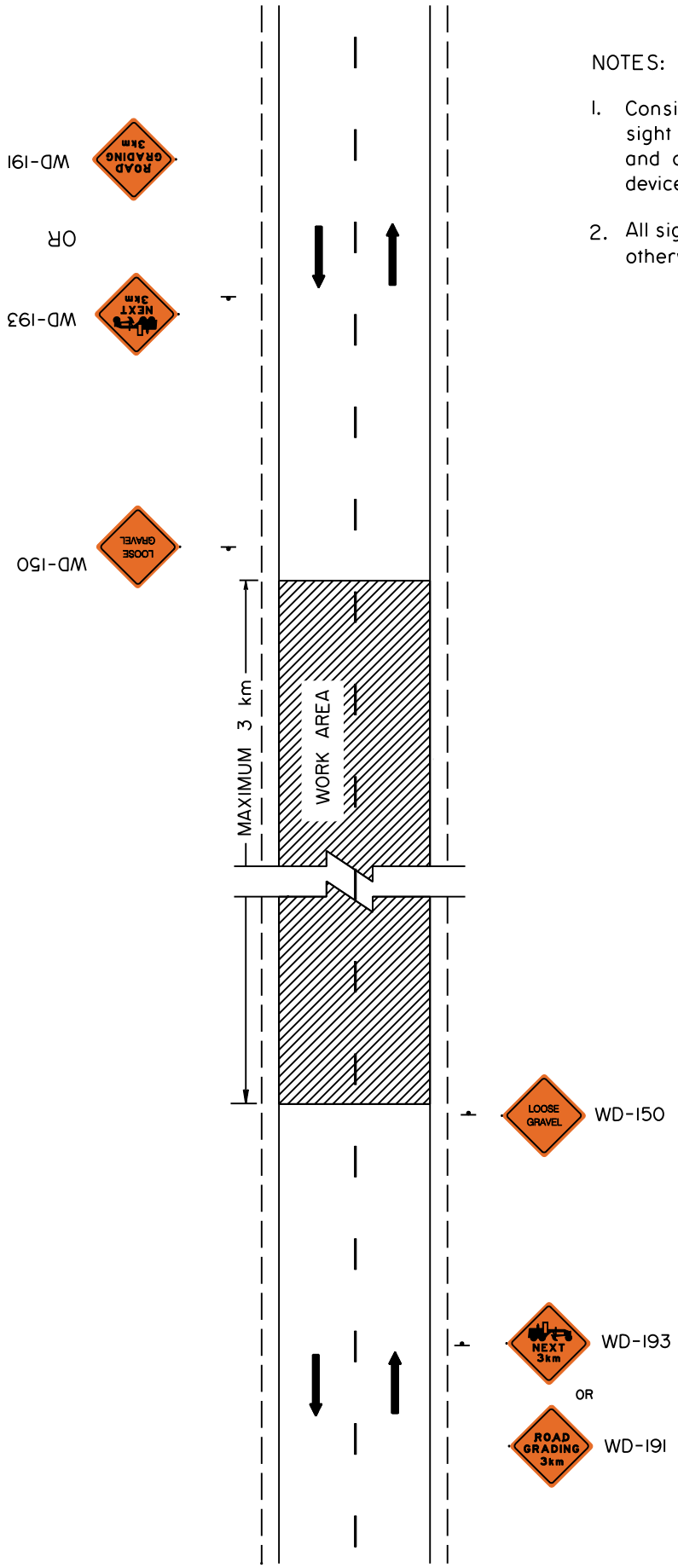
No.	REVISIONS	BY	DATE
3			
2			
1	Note and Title Block updated, note added and signs added.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
RIGHT LANE CLOSURE
REPAIR/SURVEY/TESTING/INSPECTION CREWS
SIX LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.5B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.

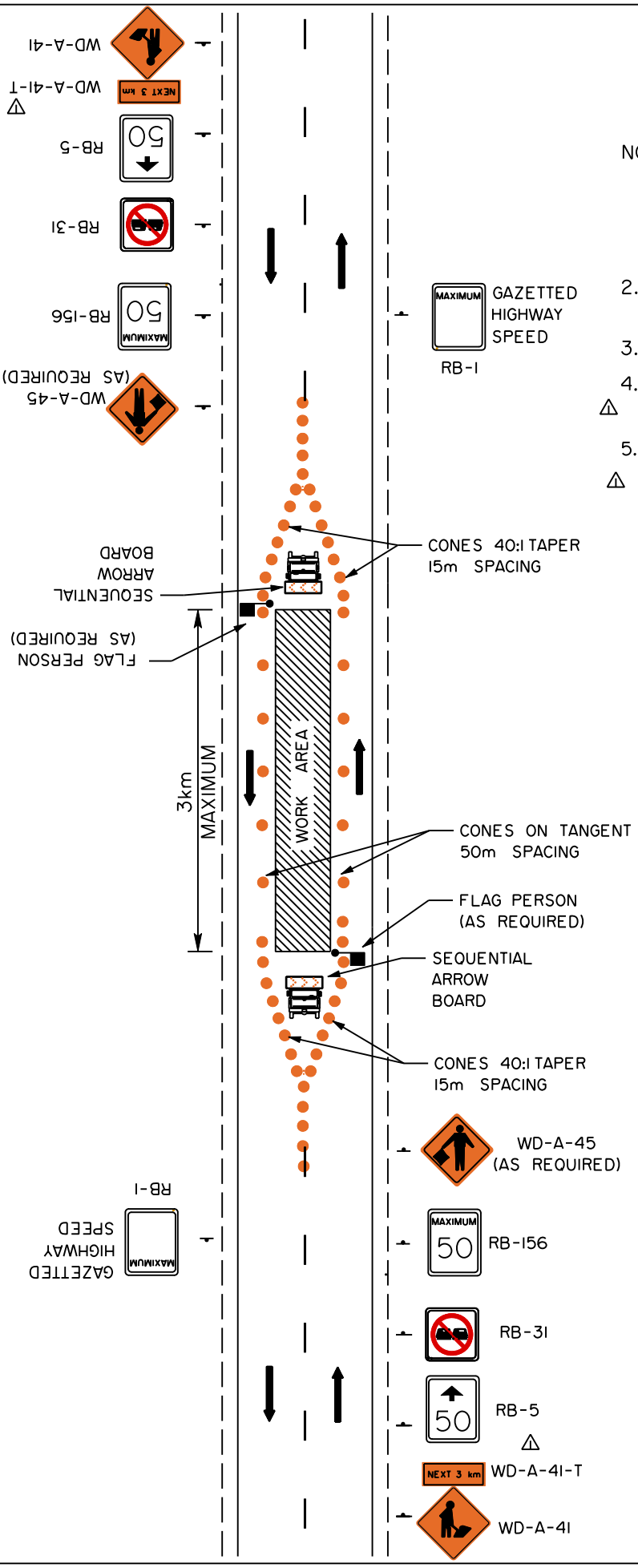
No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
ROAD TOP SHAPING
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.6A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Minimum lane width of 3.5m is required.
4. ⚠ The Sequential Arrow Board shall be located in the centre of the closed part of the roadway.
5. For mobile operation, the NEXT 3KM tab ⚠ shall be installed on the first warning sign.

No.	REVISIONS	BY	DATE
3			
2			
1 ⚠	Note and Title Block updated, note and signs added.	JM	Dec 31/07

Approved:

Original signed by Tim Hawnt

Executive Director, Technical Standards Branch

Date: MARCH, 2001

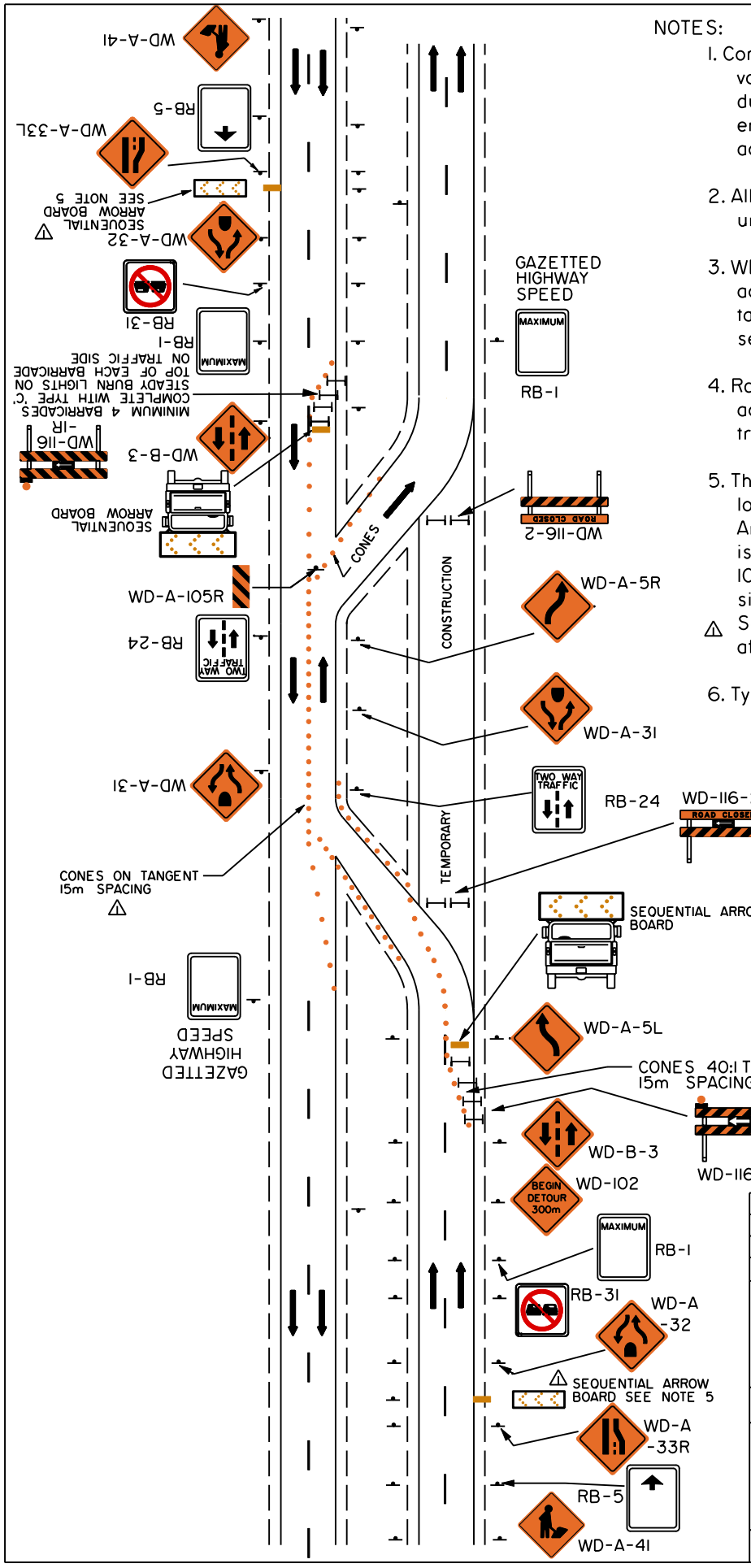
Alberta Transportation

SHORT DURATION - SIGNING WORK ON CENTRELINE ⚠

TWO LANE TRAFFIC

TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.7A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. WD-192 shall be erected 2km in advance of the work area. Distance tab to include work area length plus setback from work area.
4. Radius of crossover detour shall be adequate to accommodate multi-trailer trucks.
5. The Sequential Arrow Board shall be located in the centre of the closed lane. An additional Sequential Arrow Board is required when traffic volume exceeds 10000 vehicles per day (ASDT) or when sight distance is restricted. The additional ⚠ Sequential Arrow Board shall be located after the lane closure sign.
6. Typical signing is required in the median in both directions.

No.	REVISIONS	BY	DATE
3			
2			
⚠ 1	Note and Title Block updated and signs added.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

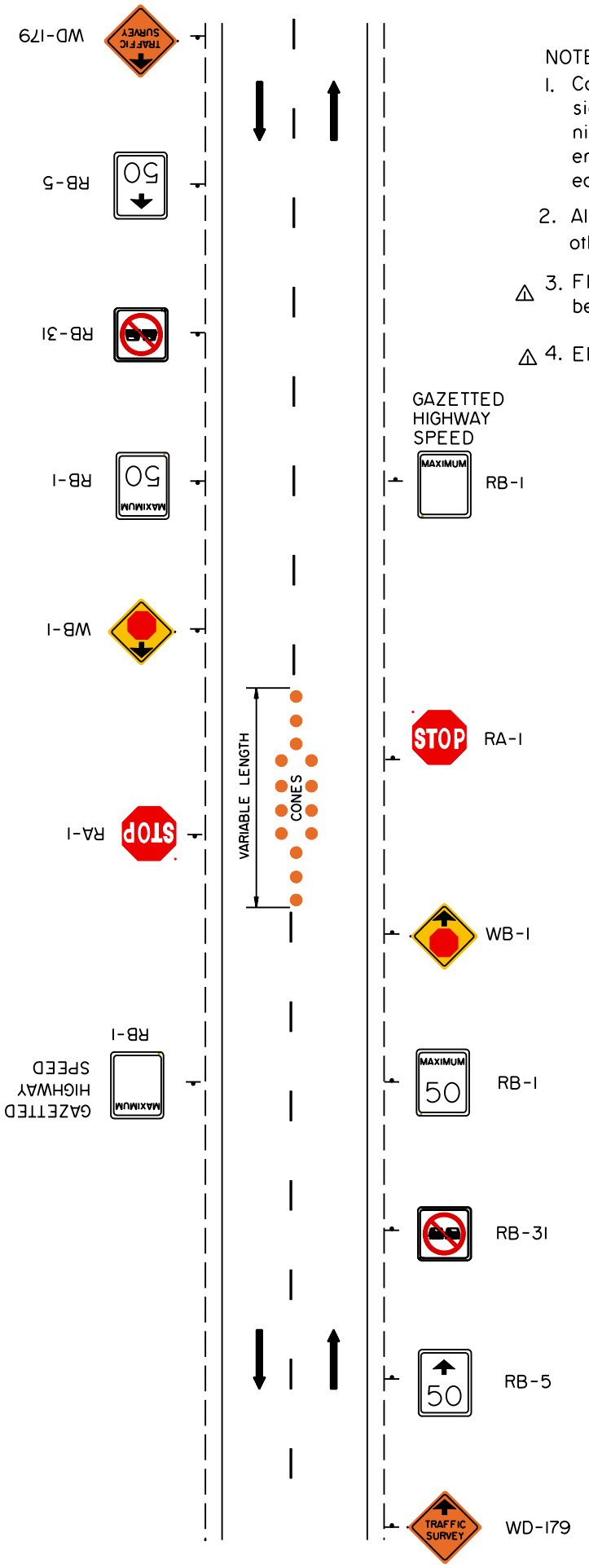
SHORT DURATION - SIGNING ⚠
TEMPORARY DETOUR TRANSITION
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-2.8B

TRAFFIC ACCOMMODATION IN WORK ZONES

LIST OF DRAWINGS

TESTING, SURVEY, AND OTHER SHORT DURATION ACTIVITIES			
TCS-B Drawing No.	**2 Lane Undivided Highway**	**4 Lane Divided Highway**	**Description**
3.1A	X		Traffic Survey
3.1B		X	Traffic Survey
3.2A	X		Mobile Testing
3.2B		X	Mobile Testing
3.3A	X		Gravel/Oil/Road Maintenance
3.4A	X		Line Painting
3.4B		X	Line Painting
3.5A	X		Chemical Vegetation Control
3.5B		X	Chemical Vegetation Control



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. ⚠ Flagpersons may be required to slow traffic before it stops.
4. ⚠ Electronic Variable Message Board is required.

Due to the specialized nature of this type of operation, a special detailed traffic accommodation strategy must be developed for each location.

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Notes and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

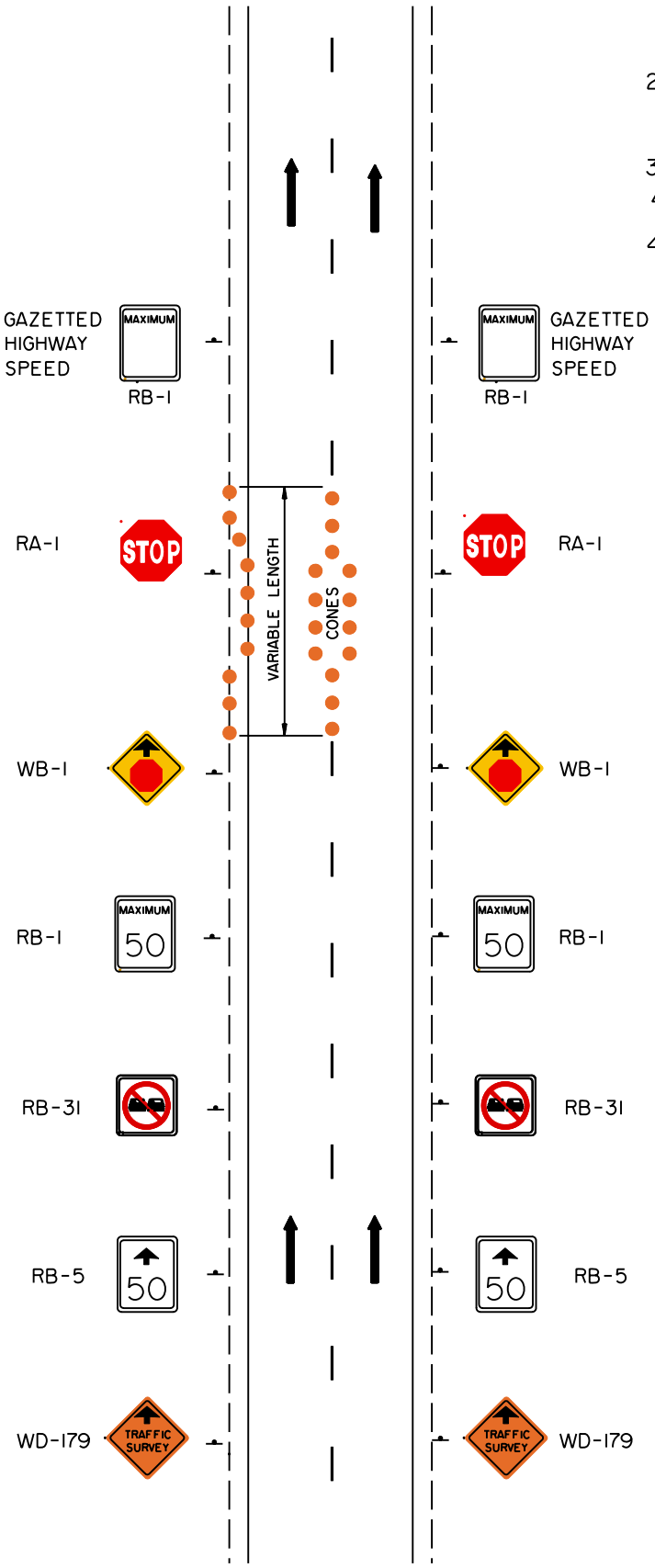
SHORT DURATION - SIGNING TRAFFIC SURVEY ⚠

TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-3.1A

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Flagpersons may be required to slow traffic before it stops. ⚠
4. Electronic Variable Message Board is required. ⚠



Due to the specialized nature of this type of operation, a special detailed traffic accommodation strategy must be developed for each location.

No.	REVISIONS	BY	DATE
3			
2			
1	Notes and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by Tim Hawnt

Executive Director, Technical Standards Branch

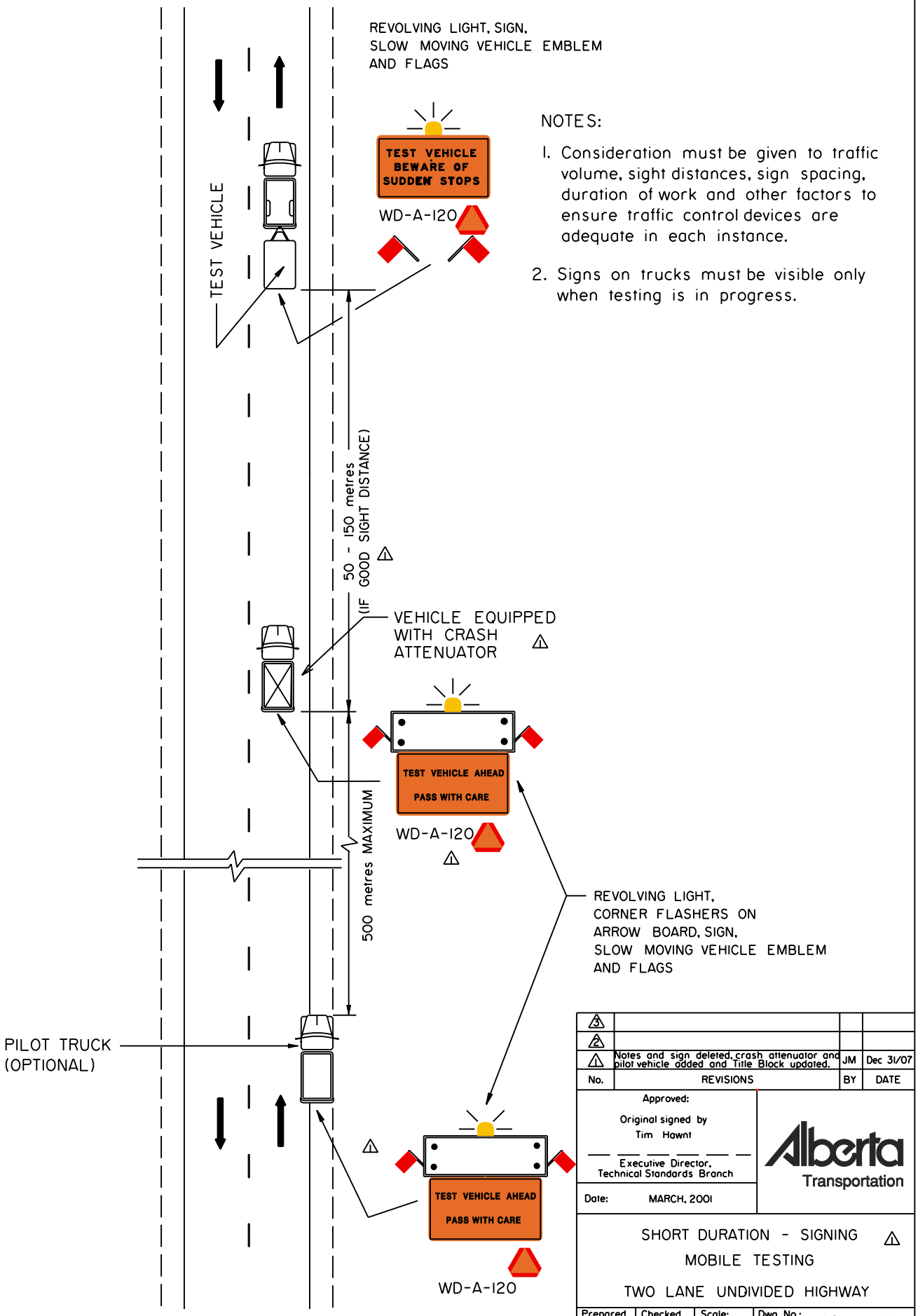
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
TRAFFIC SURVEY ⚠

FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-3.IB



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. Signs on trucks must be visible only when testing is in progress.

No.	REVISIONS	BY	DATE
3			
2			
1	Notes and sign deleted, crash attenuator and pilot vehicle added and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

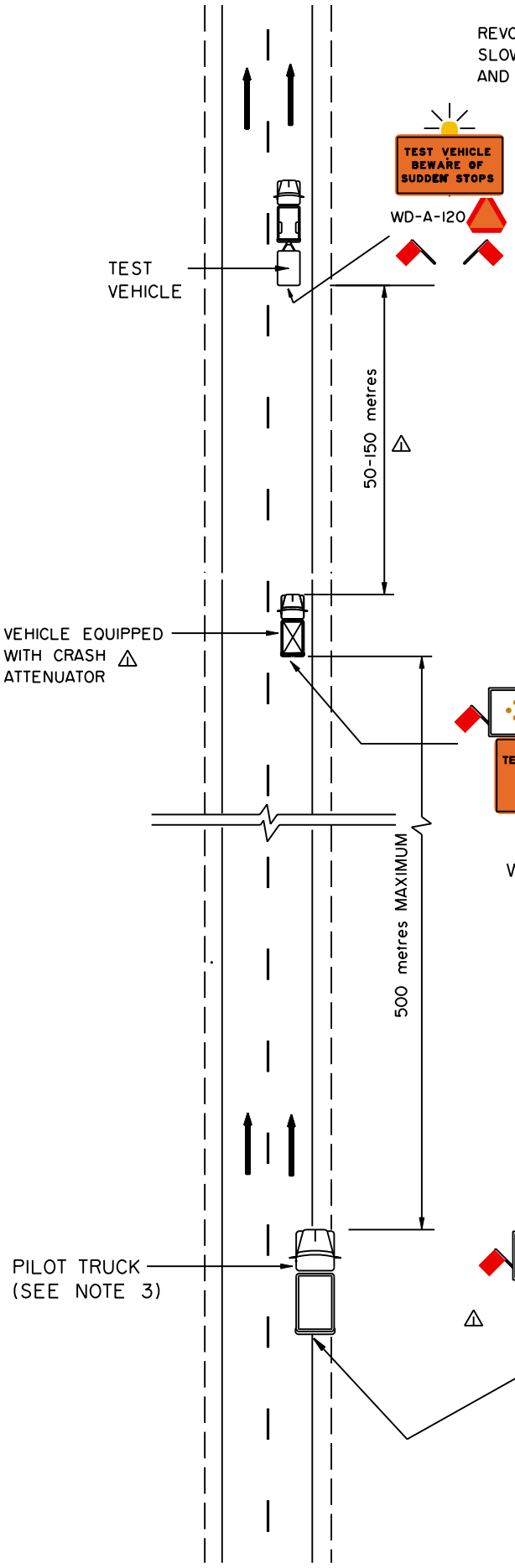
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING MOBILE TESTING

TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-3.2A



NOTES: ⚠

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. Signs on trucks must be visible only when testing is in progress.
3. If ASDT is greater than 10,000 vehicles per day, a pilot truck is required.

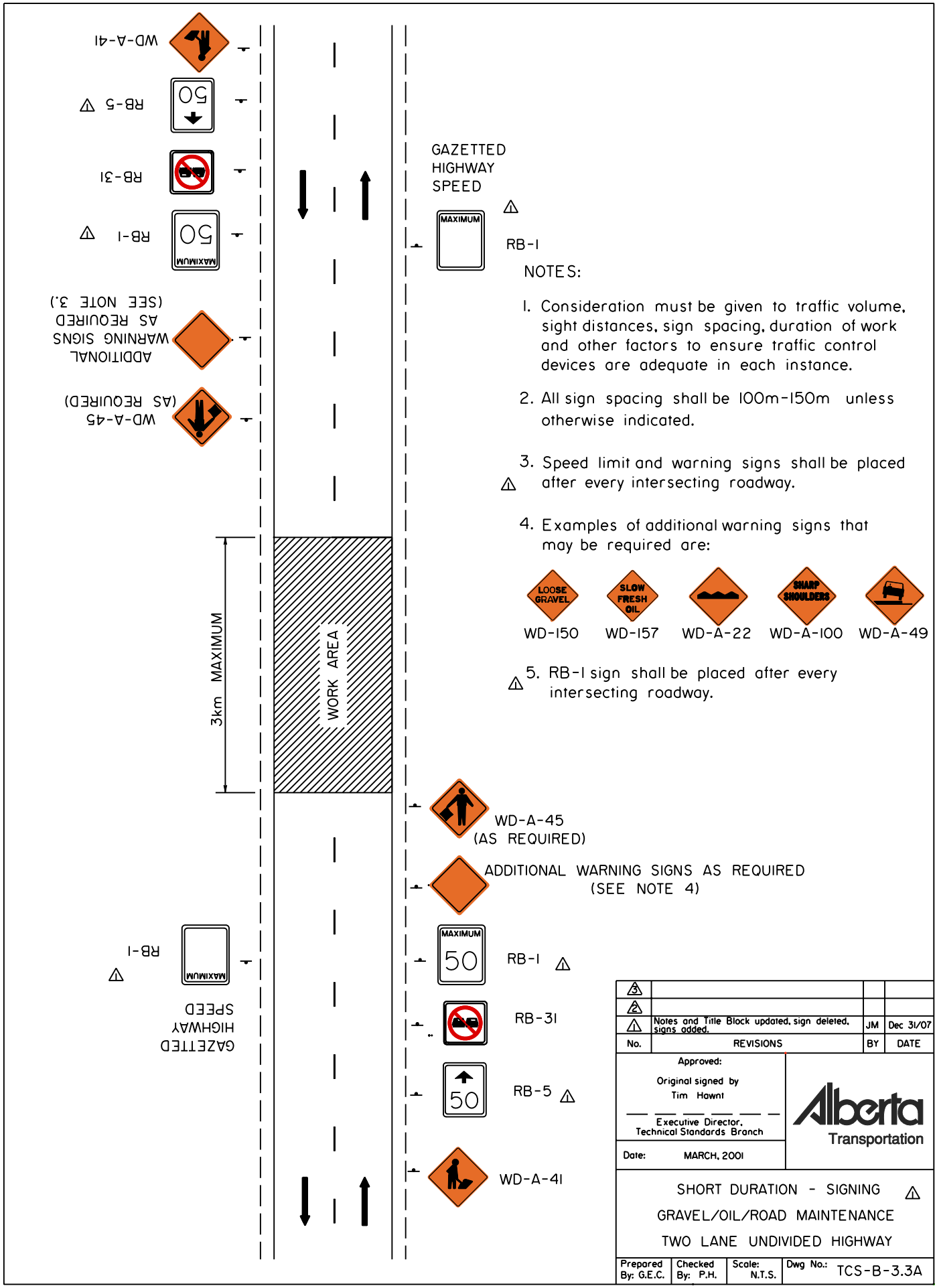
No.	REVISIONS	BY	DATE
3			
2			
⚠	Notes and sign revised, crash attenuator and pilot vehicle added and Title Block updated.	JM	Sep 23/08

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING ⚠
MOBILE TESTING
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-3.2B



GAZETTED HIGHWAY SPEED

RB-1

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway.
4. Examples of additional warning signs that may be required are:

WD-150 WD-157 WD-A-22 WD-A-100 WD-A-49

5. RB-1 sign shall be placed after every intersecting roadway.

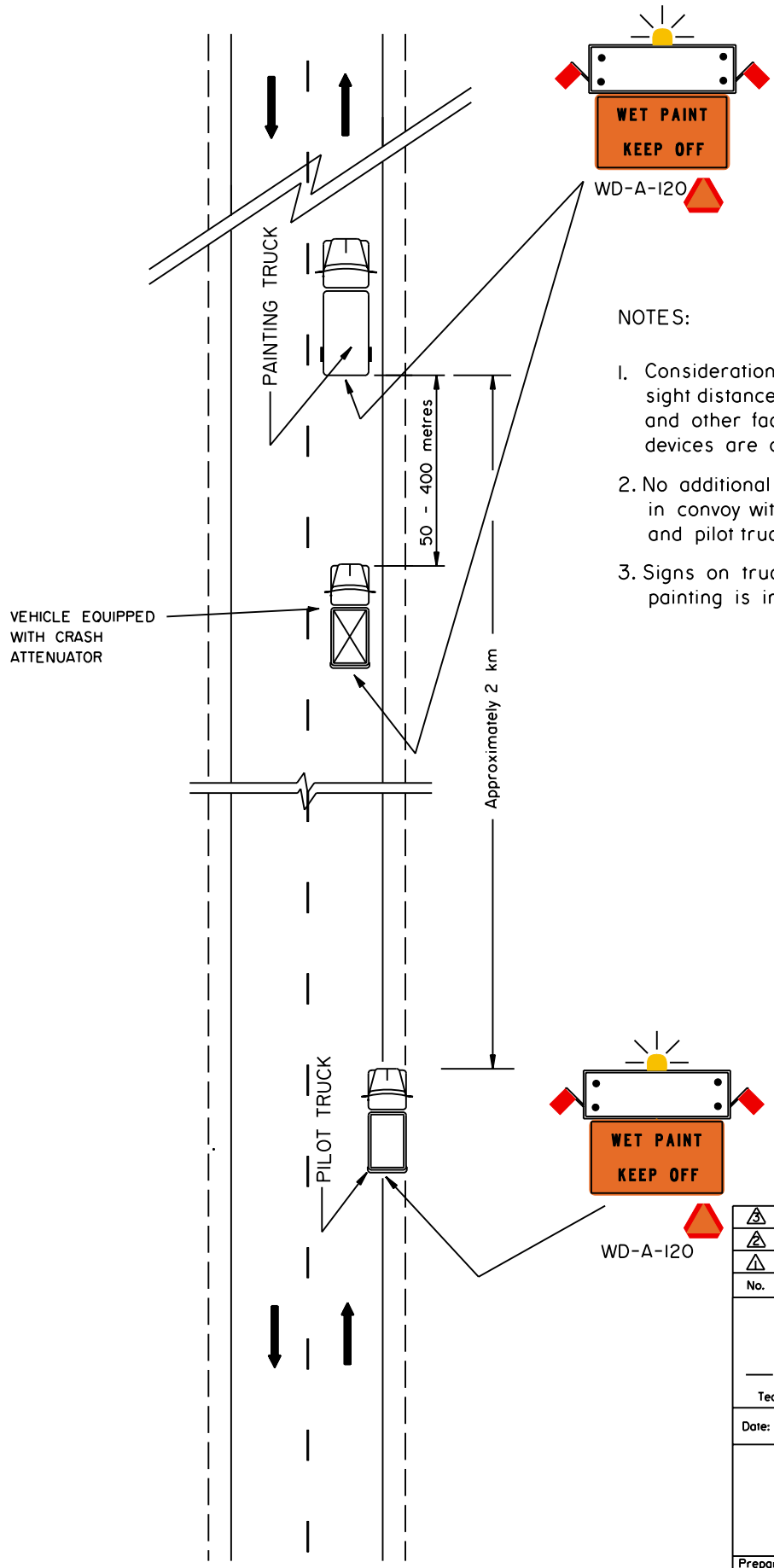
No.	REVISIONS	BY	DATE
3			
2			
1	Notes and Title Block updated, sign deleted, signs added.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
GRAVEL/OIL/ROAD MAINTENANCE
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-3.3A



REVOLVING LIGHT,
CORNER FLASHERS ON
ARROW BOARD, SIGN,
SLOW MOVING VEHICLE EMBLEM
AND FLAGS

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. No additional construction vehicle shall be driven in convoy with the paint truck, crash attenuator and pilot truck.
3. Signs on trucks must be visible only when painting is in progress.

REVOLVING LIGHT,
CORNER FLASHERS ON
ARROW BOARD, SIGN,
SLOW MOVING VEHICLE EMBLEM
AND FLAGS

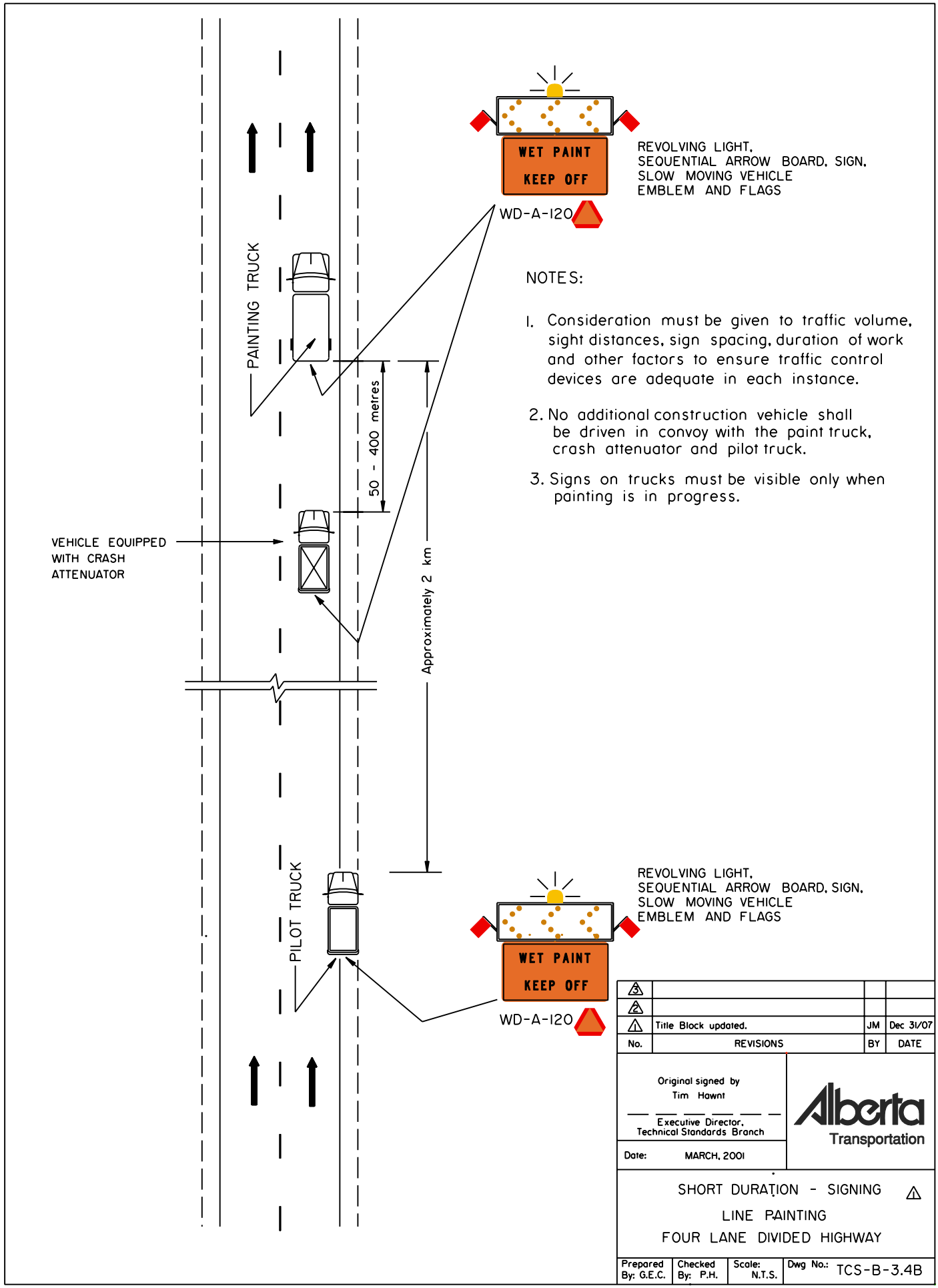
No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
LINE PAINTING
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-3.4A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. No additional construction vehicle shall be driven in convoy with the paint truck, crash attenuator and pilot truck.
3. Signs on trucks must be visible only when painting is in progress.

No.	REVISIONS	BY	DATE
3			
2			
1	Title Block updated.	JM	Dec 31/07

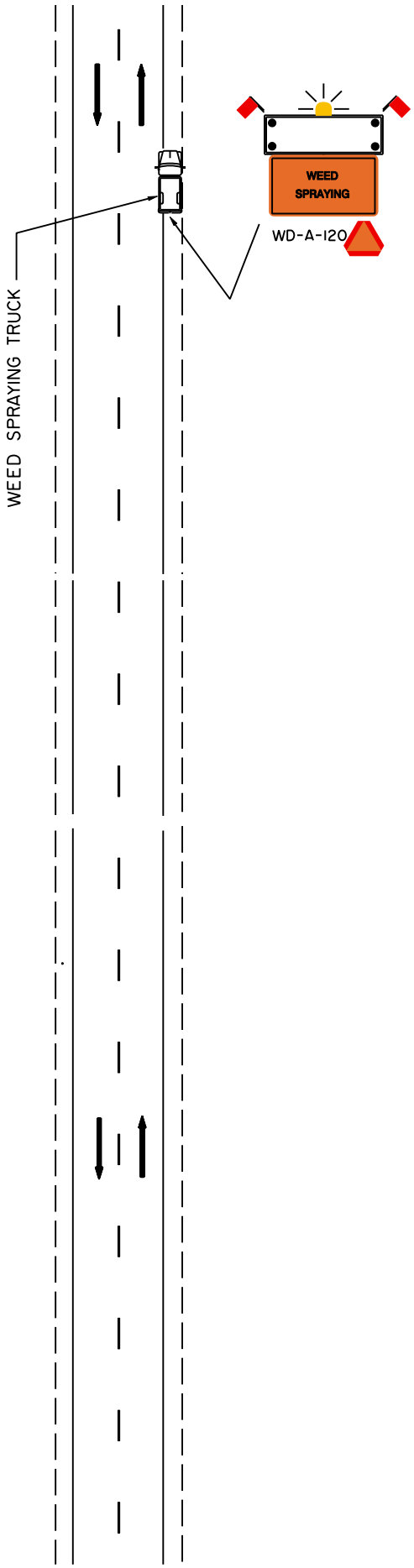
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

SHORT DURATION - SIGNING
LINE PAINTING
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-3.4B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. Signs on trucks must be visible only when weed spraying is in progress.
3. A "Slow Moving Vehicle" sign shall be mounted at the rear of the vehicle and be visible to the public only when weed spraying is in progress.
4. A warning sign, mounted at the rear of the truck stating "Weed Spraying" shall have standard warning colours with letters a minimum height of 150mm and shall be visible to the public only when weed spraying is in progress.

No.	REVISIONS	BY	DATE
3			
2			
1			

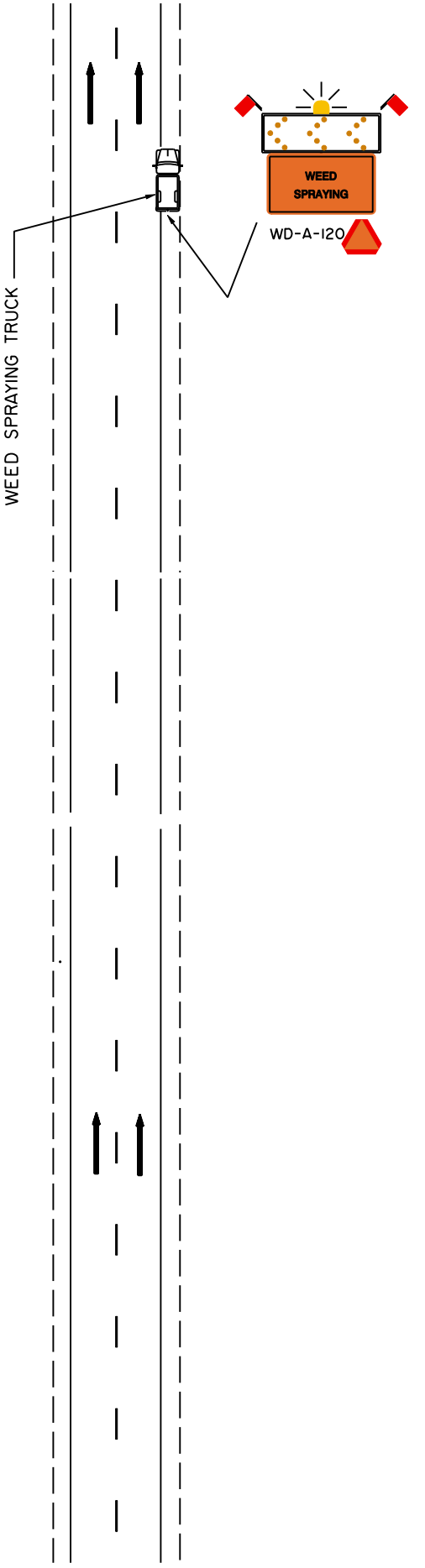
Approved:
Original signed by
Allan Kwan
Executive Director,
Technical Standards Branch

Date: OCTOBER, 2008

Alberta Transportation

SHORT DURATION - SIGNING
CHEMICAL VEGETATION CONTROL
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-3.5A



REVOLVING LIGHT,
SEQUENTIAL ARROW BOARD, SIGN,
SLOW MOVING VEHICLE
EMBLEM AND FLAGS

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. Signs on trucks must be visible only when weed spraying is in progress.
3. A "Slow Moving Vehicle" sign shall be mounted at the rear of the vehicle and be visible to the public only when weed spraying is in progress.
4. A warning sign, mounted at the rear of the truck stating "Weed Spraying" shall have standard warning colours with letters a minimum height of 150mm and shall be visible to the public only when weed spraying is in progress.

No.	REVISIONS	BY	DATE
3			
2			
1			

Approved:
Original signed by
Allan Kwan
Executive Director,
Technical Standards Branch

Date: OCTOBER, 2008

Alberta Transportation

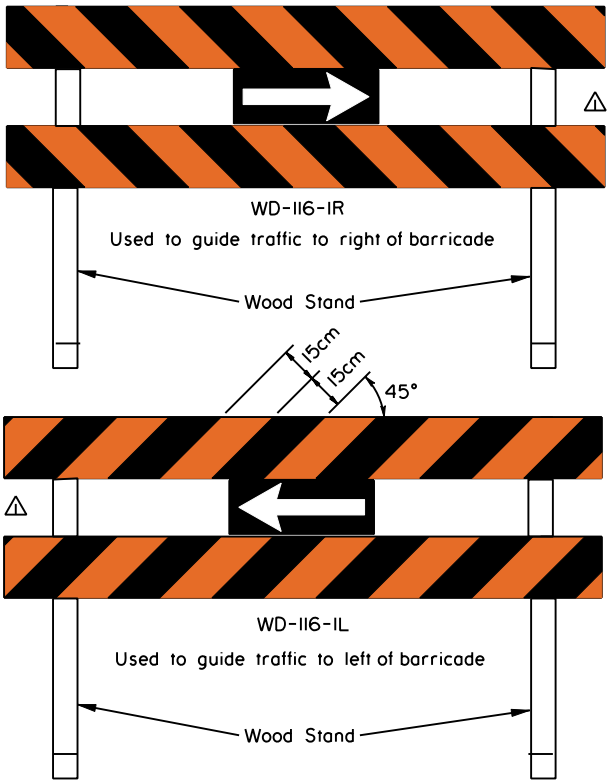
SHORT DURATION - SIGNING
CHEMICAL VEGETATION CONTROL
FOUR LANE DIVIDED HIGHWAY

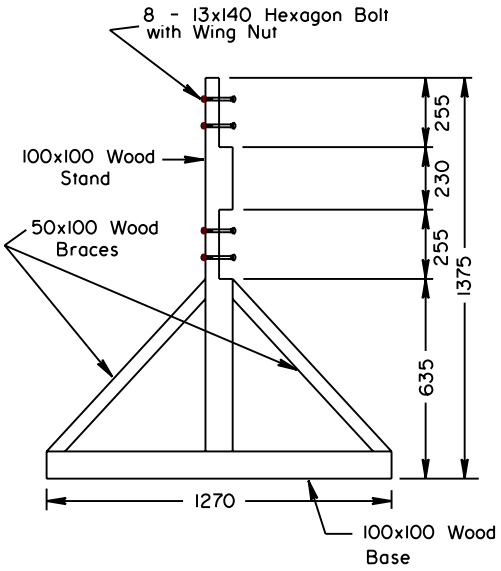
Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-3.5B

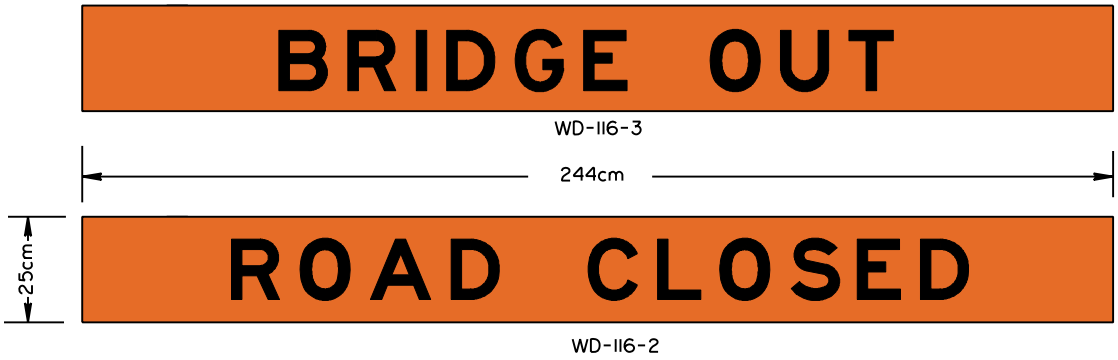
TRAFFIC ACCOMMODATION IN WORK ZONES

LIST OF DRAWINGS

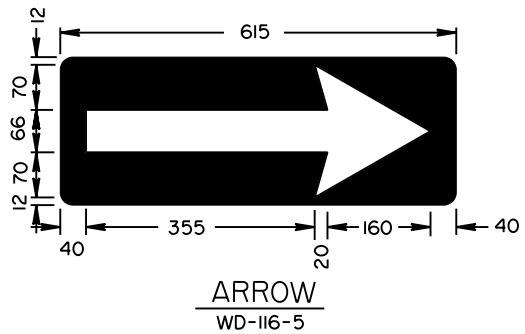
MISCELLANEOUS ITEMS			
TCS-B Drawing No.	**2 Lane Undivided Highway**	**4 Lane Divided Highway**	**Description**
4.1			Standard Barricade
4.2			Traffic Control Paddle
4.3			Traffic Barrel/Drum







Bridge Out and Road Closed boards may be used to replace one diagonal stripe board where appropriate
All dimensions are in millimetres unless otherwise indicated.



ARROW
WD-116-5

△ Note: Arrow Sign may be installed on the wood stand on the traffic side.

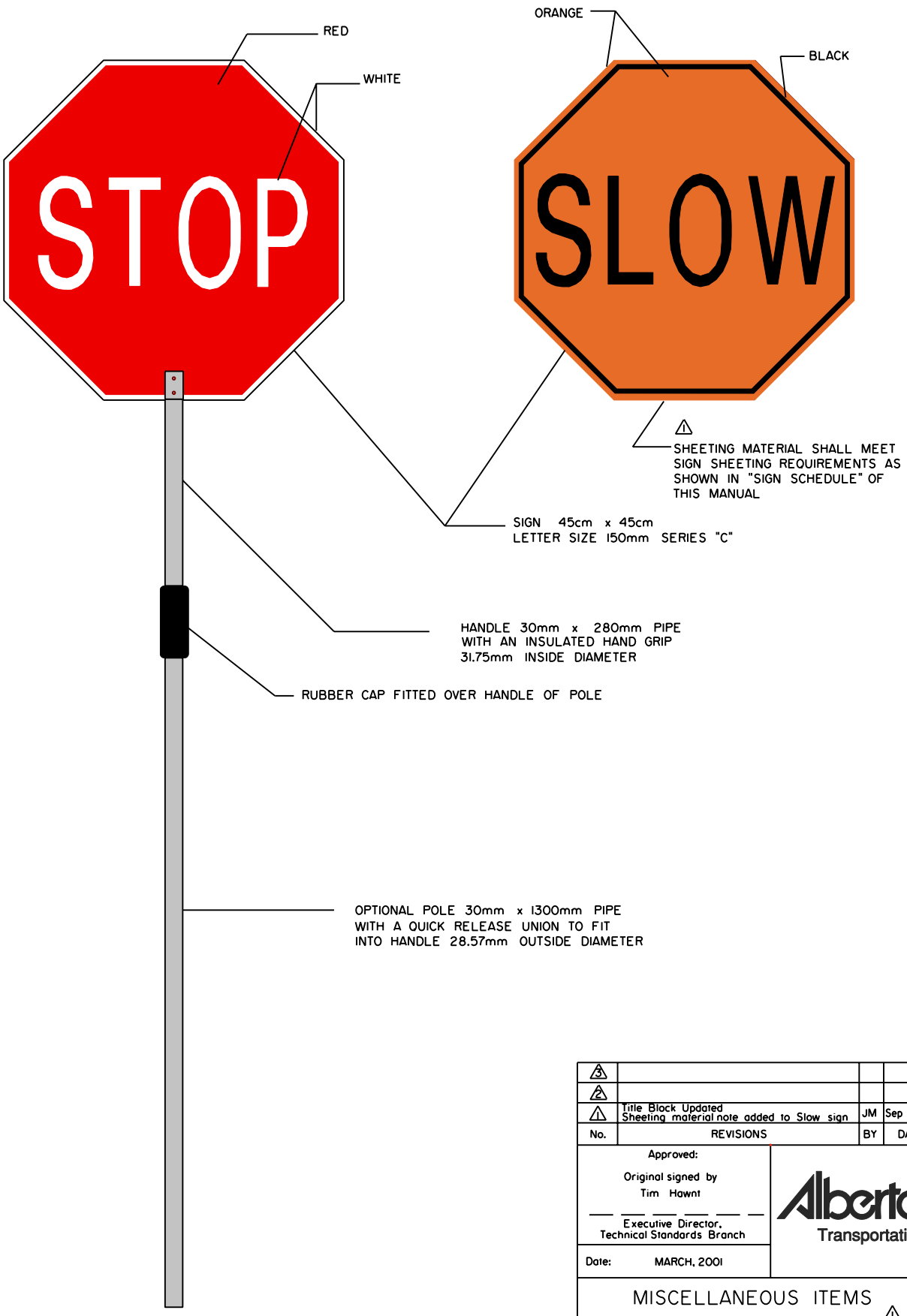
No.	REVISIONS	BY	DATE
3			
2			
1	Note and Title Block updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

MISCELLANEOUS ITEMS - STANDARD BARRICADE USED FOR CONSTRUCTION PROJECTS △1

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-4.1



No.	REVISIONS	BY	DATE
3			
2			
1	Title Block Updated Sheeting material note added to Slow sign	JM	Sep 23/08

Approved:

Original signed by
Tim Hawnt

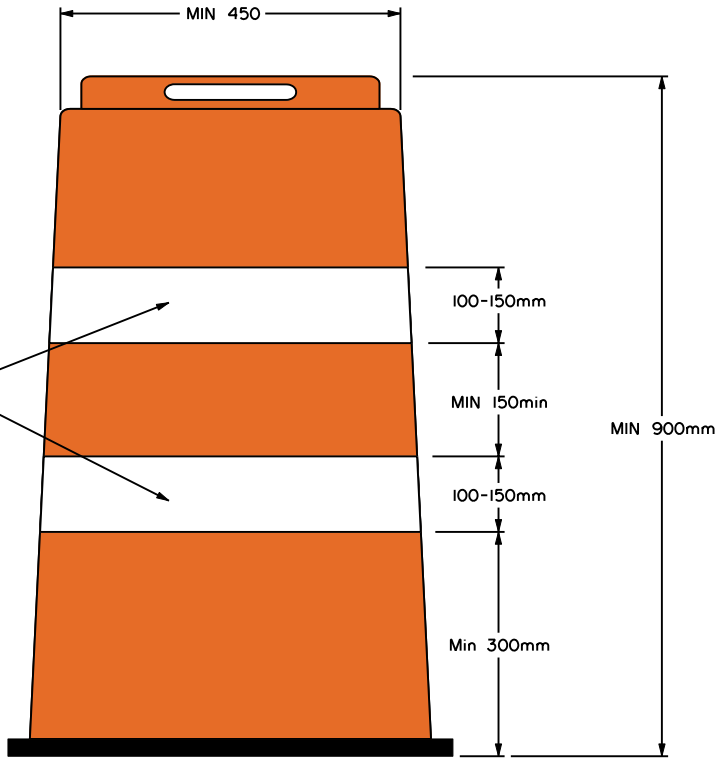
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

MISCELLANEOUS ITEMS
TRAFFIC CONTROL
PADDLE 1

Prepared By: M.T.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-4.2



WHITE REFLECTIVE BAND MATERIAL SHALL MEET SIGN SHEETING REQUIREMENTS AS PER SECTION 7.1.4.1 "MATERIALS" OF THE LATEST VERSION OF ALBERTA TRANSPORTATION STANDARD SPECIFICATIONS FOR HIGHWAY/BRIDGE CONSTRUCTION.

No.	REVISIONS	BY	DATE
3			
2			
1			

Approved:

Original signed by
Allan Kwan

Executive Director,
Technical Standards Branch

Date: OCTOBER, 2008

Alberta Transportation

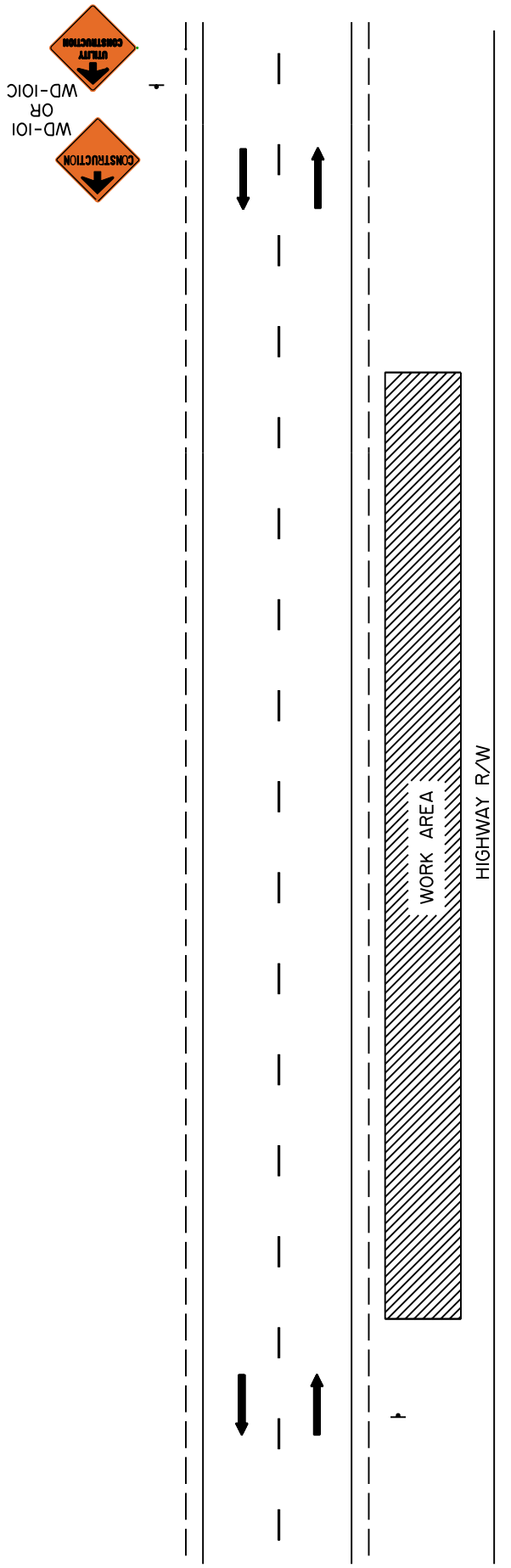
MISCELLANEOUS ITEMS - TRAFFIC BARREL/DRUM

Prepared By: M.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-4.3

TRAFFIC ACCOMMODATION IN WORK ZONES

LIST OF DRAWINGS

UTILITIES CONSTRUCTION			
TCS-B Drawing No.	**2 Lane Undivided Highway**	**4 Lane Divided Highway**	**Description**
5.1A	X		Work off Road Surface
5.1B		X	Work off Road Surface
5.2A	X		Work on Shoulder
5.2B		X	Work on Shoulder
5.3A	X		One Lane Closure (One Lane Alternating Traffic)
5.3B		X	One Lane Closure



NOTES:

1. Each situation will require individual assessment, and consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

3. No vehicles shall be parked on the road surface.

4. Materials or equipment may only be placed or stored on the outside backslope in a position to reduce damages to vehicles that may run off the roadway.

⚠ 5. If working outside of the clear zone, signage may not be required.

6. All signs shall be kept clean and in good condition. The bottom of the sign shall not be less than 0.3m above the road surface.

7. During periods when no work is being actively performed, all non-applicable signs are to be removed or suitably covered

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Note added and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

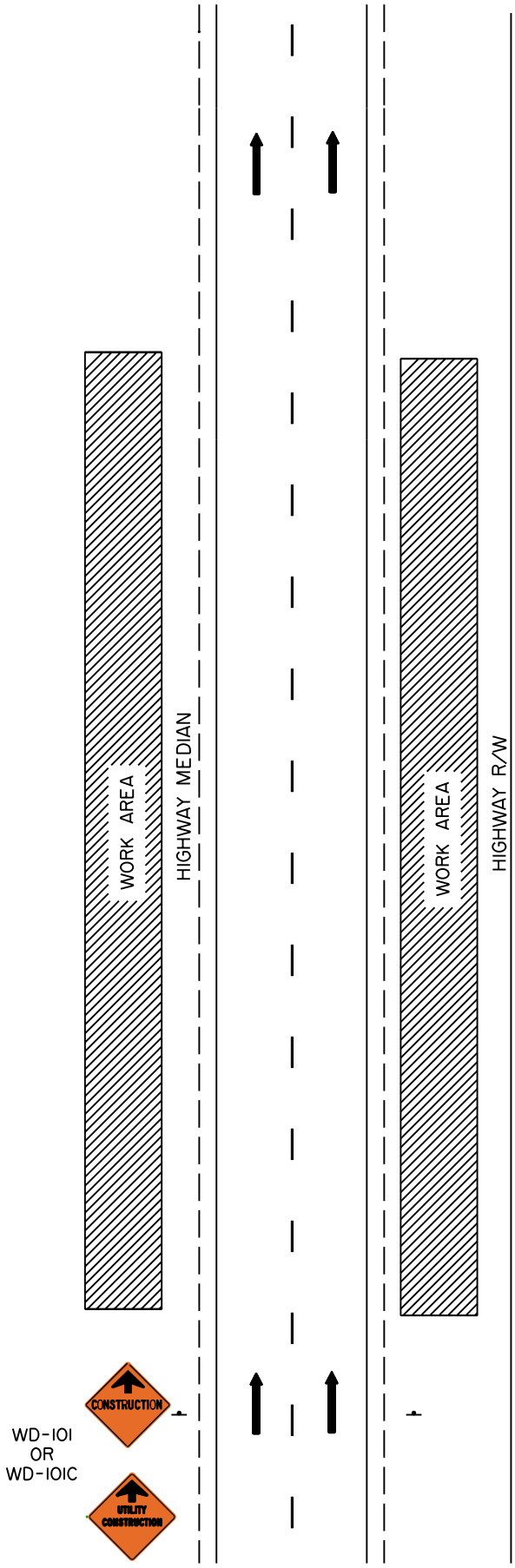
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

UTILITIES CONSTRUCTION - SIGNING ⚠ WORK OFF ROAD SURFACE TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-5.1A



NOTES:

1. Each situation will require individual assessment, and consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

3. No vehicles shall be parked on the road surface.

4. Materials or equipment may only be placed or stored on the outside backslope in a position to reduce damages to vehicles that may run off the roadway.

5. Materials or equipment shall not be stored in the median.

6. If working outside of the clear zone, signage may not be required.

7. All signs shall be kept clean and in good condition. The bottom of the sign shall not be less than 0.3m above the road surface.

8. During periods when no work is being actively performed, all non-applicable signs are to be removed or suitably covered

No.	REVISIONS	BY	DATE
3			
2			
1	Note added and Title Block updated.	JM	Dec 31/07

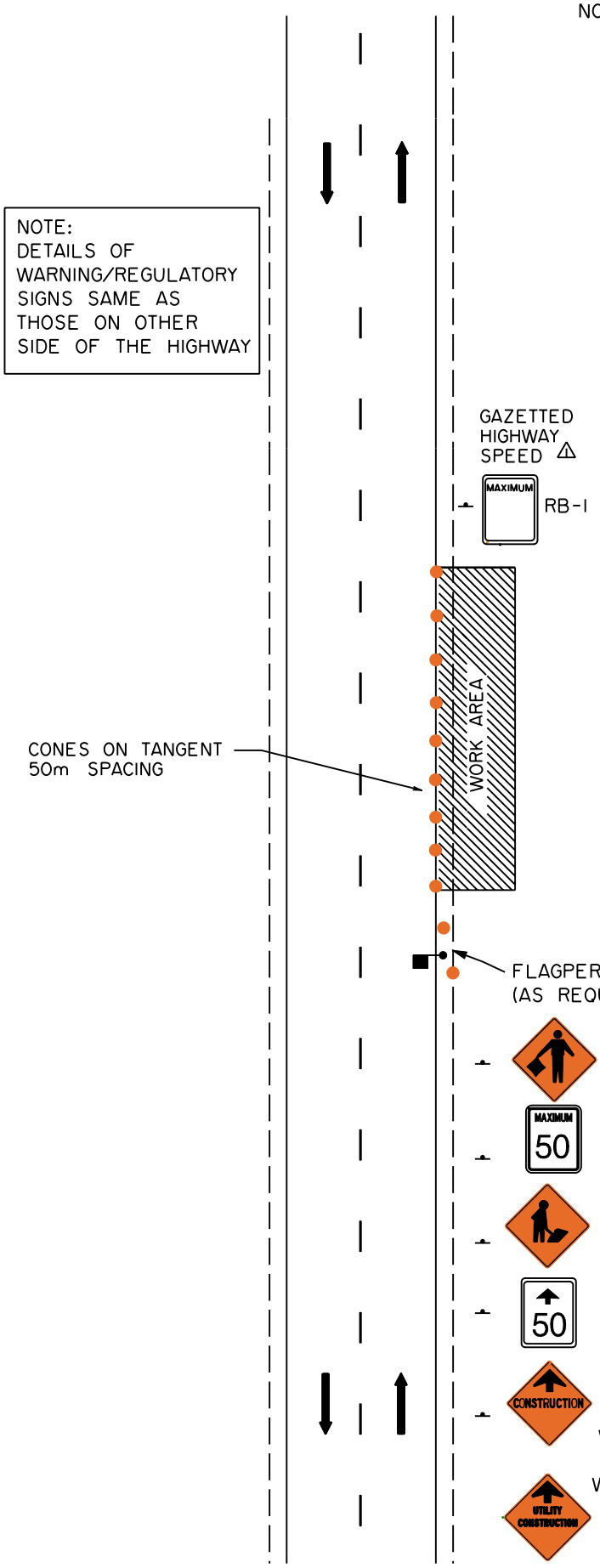
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

UTILITIES CONSTRUCTION - SIGNING
WORK OFF ROAD SURFACE
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-5.1B



NOTES:

1. Each situation will require individual assessment, and consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

3. No vehicles shall be parked on the driving lanes. When it is necessary to park vehicles on the shoulder of the road, they shall be marked by traffic cones.

4. If equipment is being moved across the roadway, ⚠ WD-A-45 and a flagperson shall be used.

5. All signs shall be kept clean and in good condition. ⚠ The bottom of the sign shall not be less than 0.3m above the road surface.

6. During periods when no work is being actively performed, all non-applicable signs are to be removed or suitably covered.

7. Materials or equipment may be placed or stored adjacent to the highway property line if required. ⚠

No.	REVISIONS	BY	DATE
3			
2			
1	Signs added/deleted and notes and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

Executive Director,
Technical Standards Branch

Date: MARCH, 2001

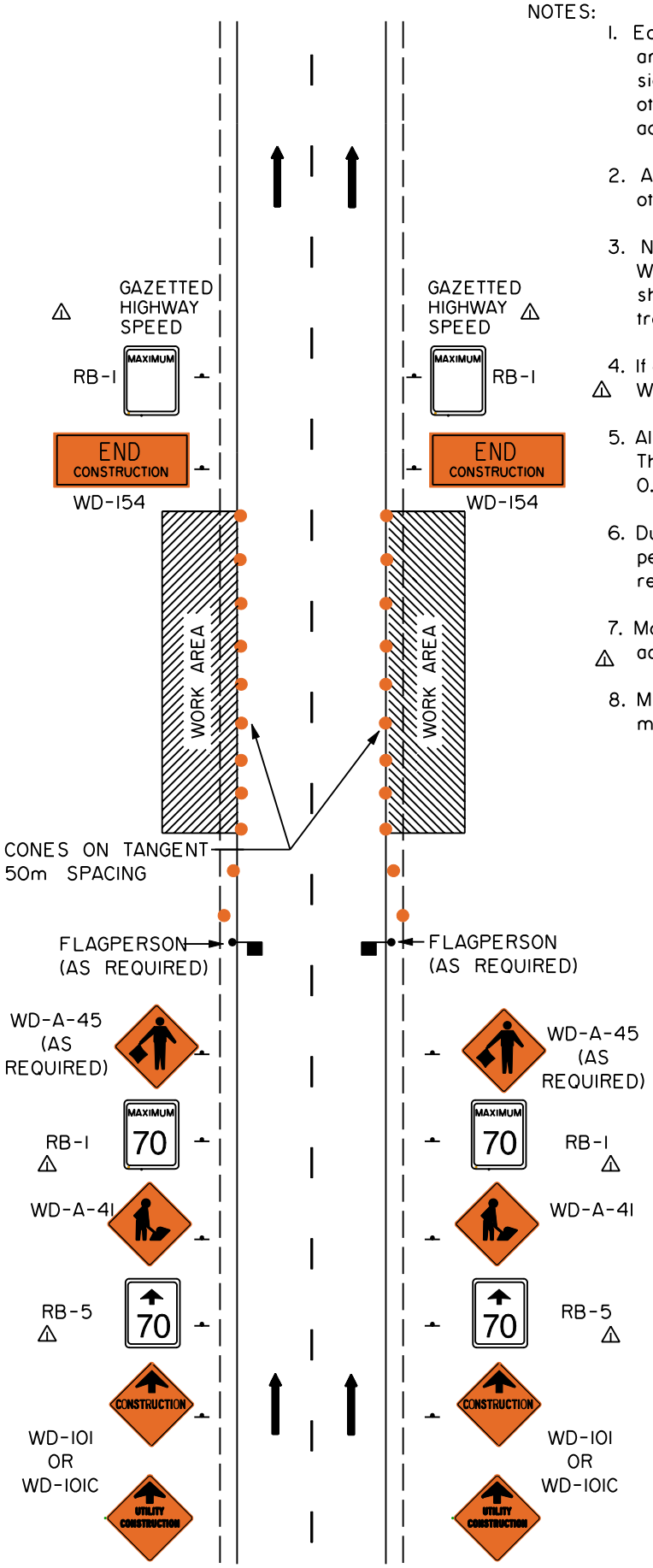
Alberta Transportation

UTILITIES CONSTRUCTION - SIGNING ⚠
WORK ON SHOULDER
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-5.2A

NOTES:

1. Each situation will require individual assessment, and consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. No vehicles shall be parked on the driving lanes. When it is necessary to park vehicles on the shoulder of the road, they shall be marked by traffic cones.
4. If equipment is being moved across the roadway, WD-A-45 and a flagperson shall be used.
5. All signs shall be kept clean and in good condition. The bottom of the sign shall not be less than 0.3m above the road surface.
6. During periods when no work is being actively performed, all non-applicable signs are to be removed or suitably covered.
7. Materials or equipment may be placed or stored adjacent to the highway property line if required.
8. Materials or equipment shall not be stored in the median.



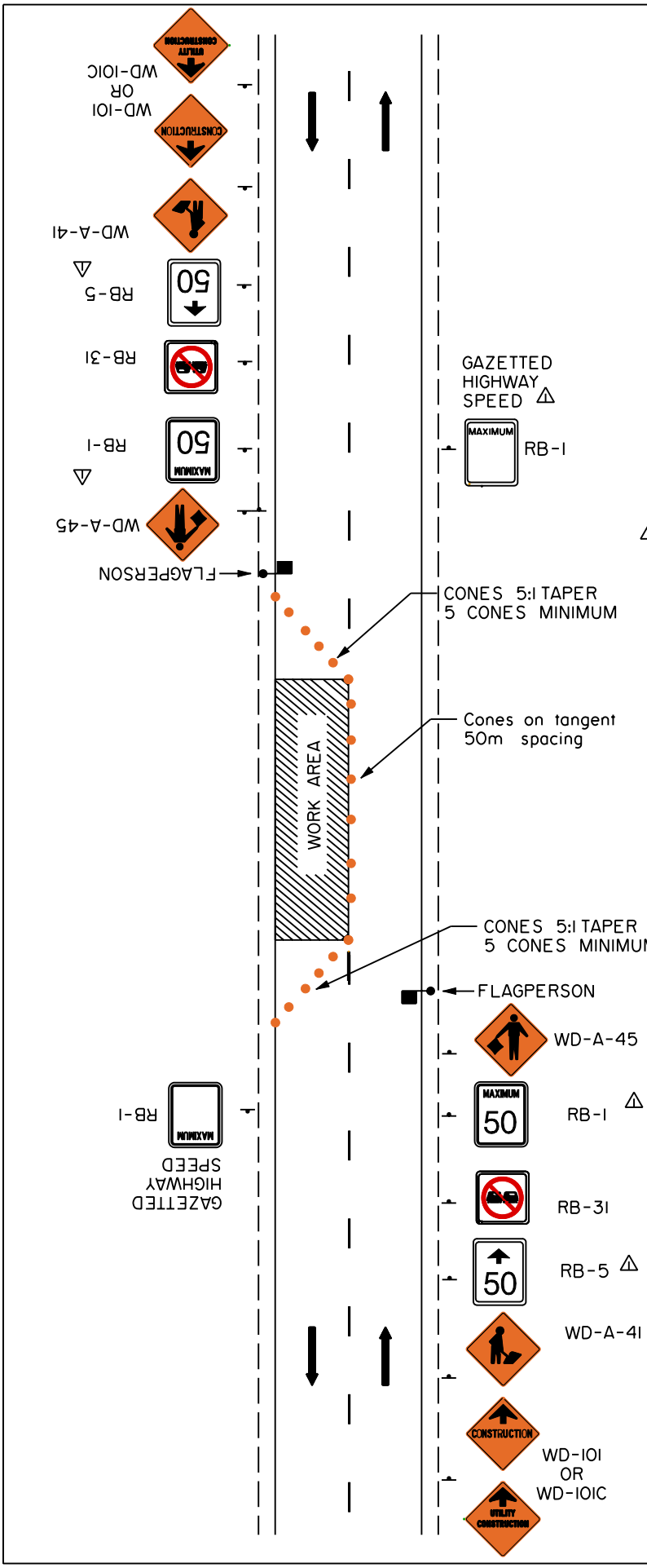
No.	REVISIONS	BY	DATE
3			
2			
1	70 km/h added, note deleted and Title Block updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawn
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

UTILITIES CONSTRUCTION - SIGNING
WORK ON SHOULDER
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-5.2B



NOTES:

1. Each situation will require individual assessment, and consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

3. All signs shall be kept clean and in good condition. The bottom of the sign shall not be less than 0.3m above the road surface.

4. During periods when no work is being actively performed, all non-applicable signs are to be removed or suitably covered.

5. Materials or equipment may be placed or stored adjacent to the highway property line if required.

No.	REVISIONS	BY	DATE
3			
2			
1	Signs added/deleted, notes and Title Block updated.	JM	Dec 31/07

Approved:

Original signed by
Tim Hawnt

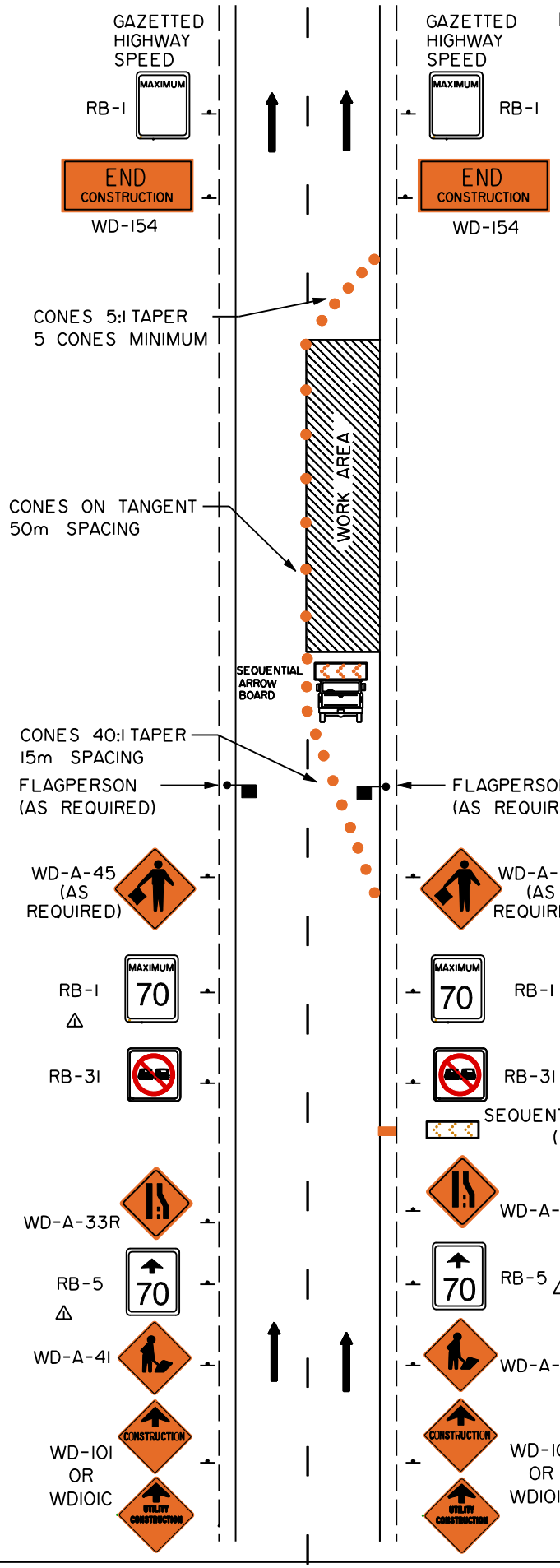
Executive Director,
Technical Standards Branch

Date: MARCH, 2001

Alberta Transportation

UTILITIES CONSTRUCTION - SIGNING
ONE LANE CLOSURE
(ONE LANE ALTERNATING TRAFFIC)
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-5.3A



NOTES:

1. Each situation will require individual assessment, and consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. All signs shall be kept clean and in good condition. The bottom of the sign shall not be less than 0.3m above the road surface.
4. During periods when no work is being actively performed, all non-applicable signs are to be removed or suitably covered.
5. Materials or equipment may be placed or ⚠ stored adjacent to the highway property line if required.
6. Materials or equipment shall not be stored in the median.
7. The Sequential Arrow Board shall be located in the centre of the closed lane. An additional ⚠ Sequential Arrow Board is required when traffic volume exeeds 10000 vehicles per day or when sight distance is restricted.

No.	REVISIONS	BY	DATE
⚠5			
⚠4			
⚠3	Signs and 70 km/h added, notes and Title Block updated.	JM	Dec 31/07

Approved:
Original signed by
Tim Hawnt
Executive Director,
Technical Standards Branch
Date: MARCH, 2001

Alberta Transportation

UTILITIES CONSTRUCTION - SIGNING ⚠
ONE LANE CLOSURE
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: P.H.	Scale: N.T.S.	Dwg No.: TCS-B-5.3B

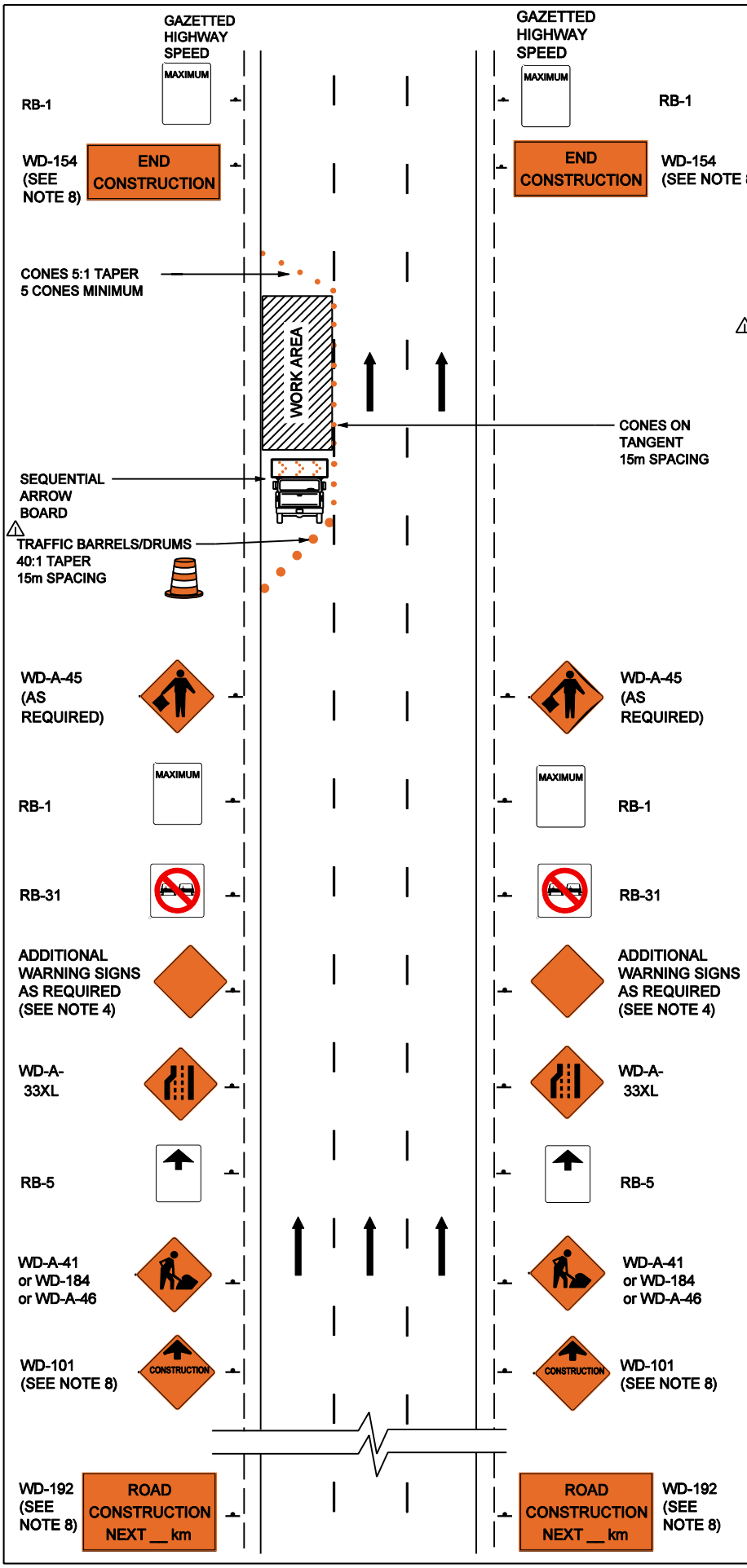
SECTION III

STANDARD DRAWINGS FOR TRAFFIC CONTROL ON URBAN HIGHWAYS

TRAFFIC ACCOMMODATION IN URBAN WORK ZONES

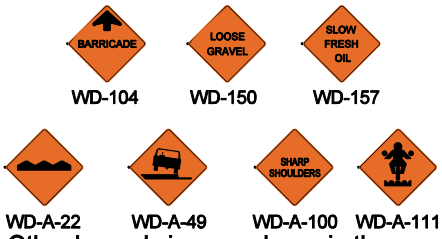
LIST OF DRAWINGS

HIGH SPEED/HIGH VOLUME	
TCS-B Drawing No.	**Description**
6.1B	Left Lane Closure
6.2B	Right Lane Closure
6.3B	Centre and Right Lane Closure
6.4B	Centre and Left Lane Closure
6.5B	Detour Four Lane to Opposing Traffic
6.6B	Work on Shoulder
6.7B	Localized Excavation Adjacent to Shoulder (Within Work Zone)
6.8B	Ramp to One-Lane Closure (Free-Flow)
6.9B	Ramp to Two-Lane Closure
6.10B	3 Lane Closure to Off-Ramp
6.11B	Full Closure to Detour
6.12A	Detour



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway throughout the work zone where there is a restricted speed zone. ⚠1
4. Examples of additional warning signs that may be required in conjunction with this plan are:



5. Other hazard signs as shown in the schedule of signs may be used as required.
6. Electronic variable message board is required when average summer daily traffic (ASDT) volume exceeds 10,000 vehicles per day or when sight distance is restricted.
7. WD-192 shall be erected 2km in advance or the distance may be adjusted due to site specific requirements of the project. Distance tab to include project length plus setback from project limit.
8. WD-192, WD-101, WD-154 signs are not required for short duration work.
9.

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Title block and notes updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

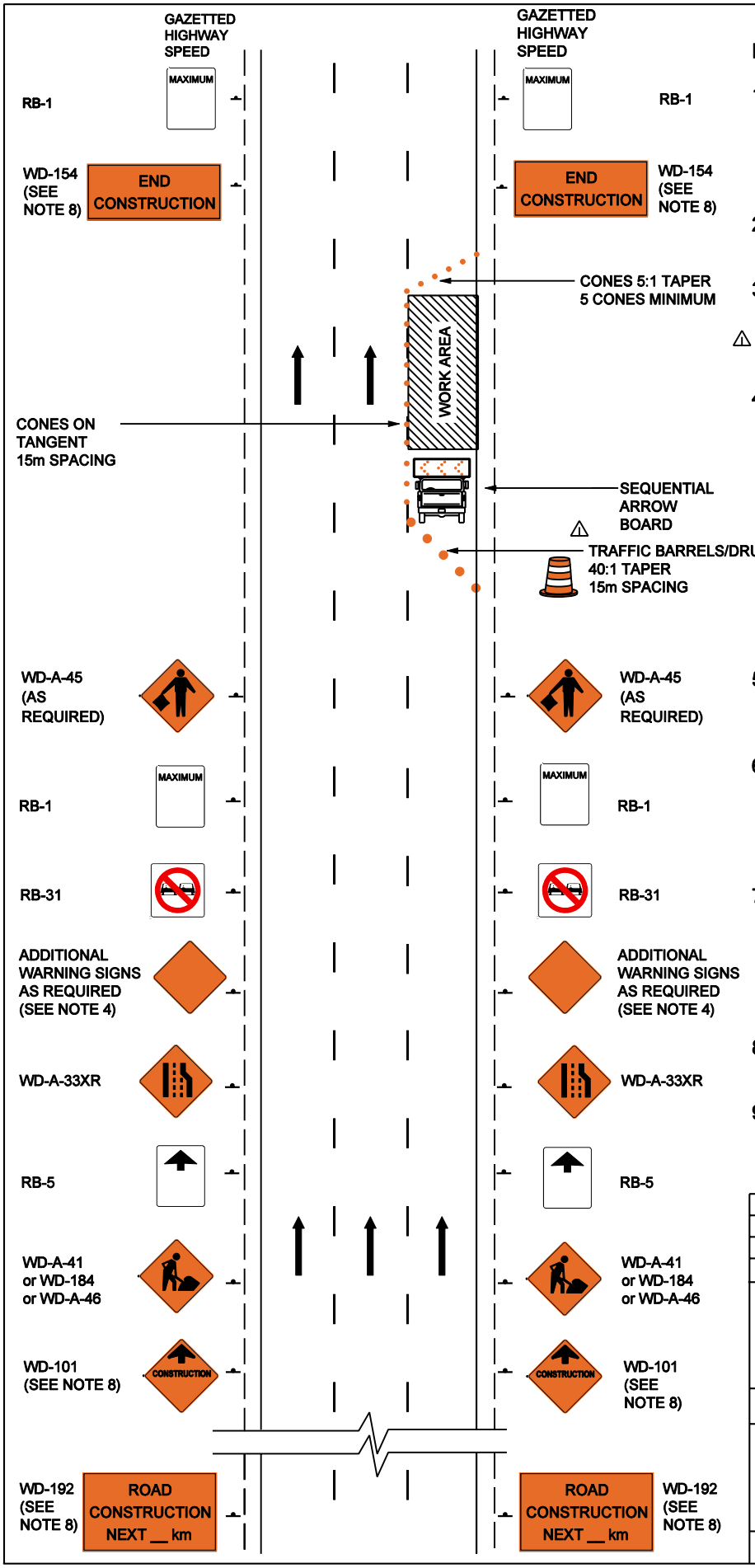
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

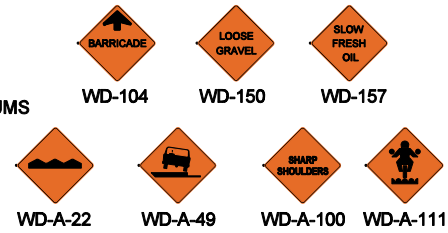
HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS LEFT LANE CLOSURE ⚠1

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.IB



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway throughout the work zone where there is a restricted speed zone. ⚠
4. Examples of additional warning signs that may be required in conjunction with this plan are:



WD-104 WD-150 WD-157
WD-A-22 WD-A-49 WD-A-100 WD-A-111

5. Other hazard signs as shown in the schedule of signs may be used as required.
6. Electronic variable message board is required when average summer daily traffic (ASDT) volume exceeds 10,000 vehicles per day or when sight distance is restricted.
7. WD-192 shall be erected 2km in advance or the distance may be adjusted due to site specific requirements of the project. Distance tab to include project length plus setback from project limit.
8. WD-192, WD-101, WD-154 signs are not required for short duration work.
9. 

WD-184 WD-A-46

No.	REVISIONS	BY	DATE
3			
2			
1	Title block and notes updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

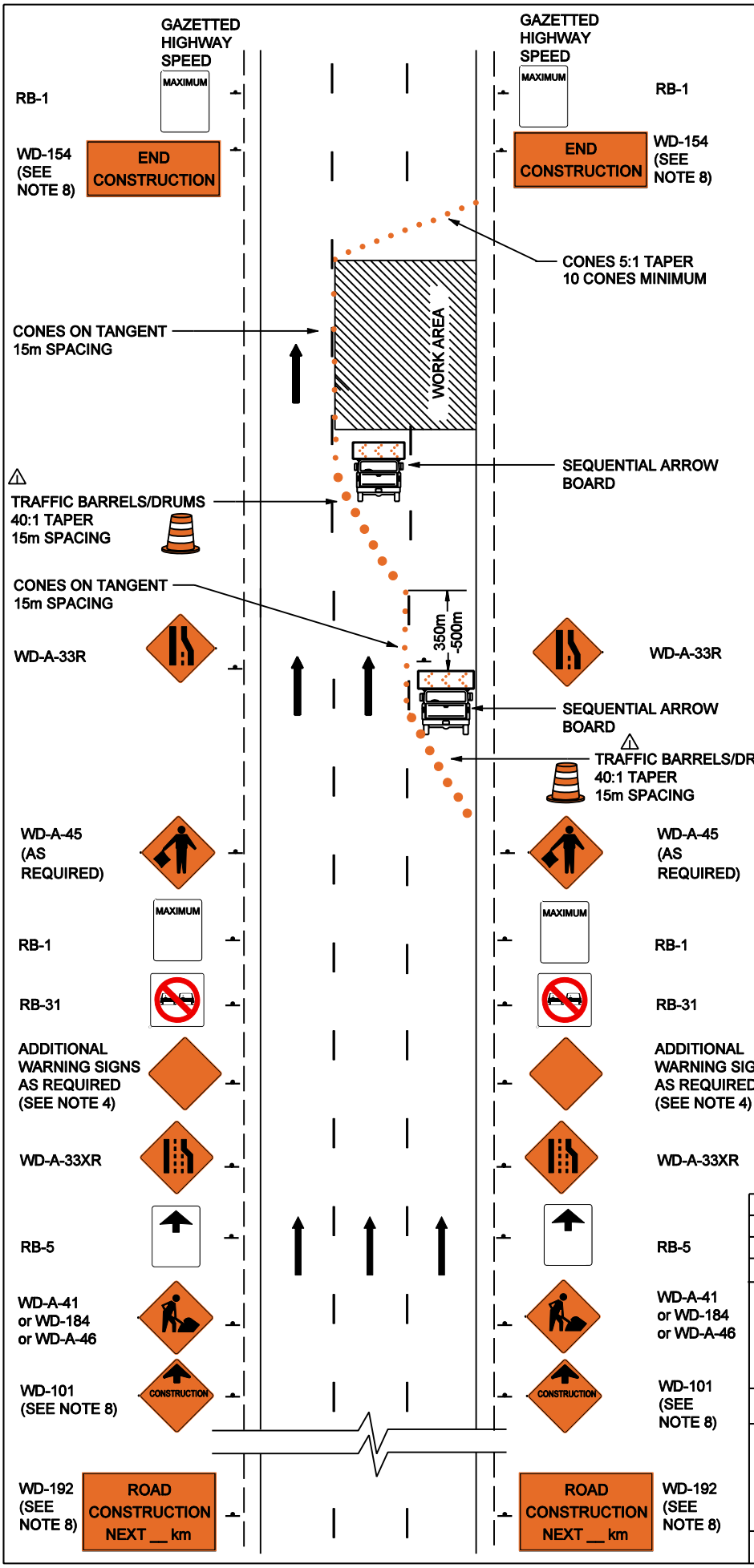
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

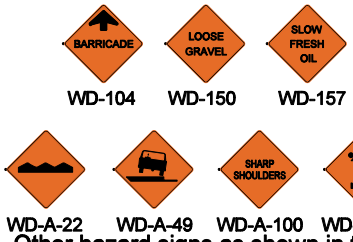
HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS RIGHT LANE CLOSURE ⚠

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.2B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway throughout the work zone where there is a restricted speed zone.
4. Examples of additional warning signs that may be required in conjunction with this plan are:



5. Other hazard signs as shown in the schedule of signs may be used as required.
6. Electronic variable message board is required when average summer daily traffic (ASDT) volume exceeds 10,000 vehicles per day or when sight distance is restricted.
7. WD-192 shall be erected 2km in advance or the distance may be adjusted due to site specific requirements of the project. Distance tab to include project length plus setback from project limit.
8. WD-192, WD-101, WD-154 signs are not required for short duration work.
9. 

No.	REVISIONS	BY	DATE
3			
2			
1	Title block and notes updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

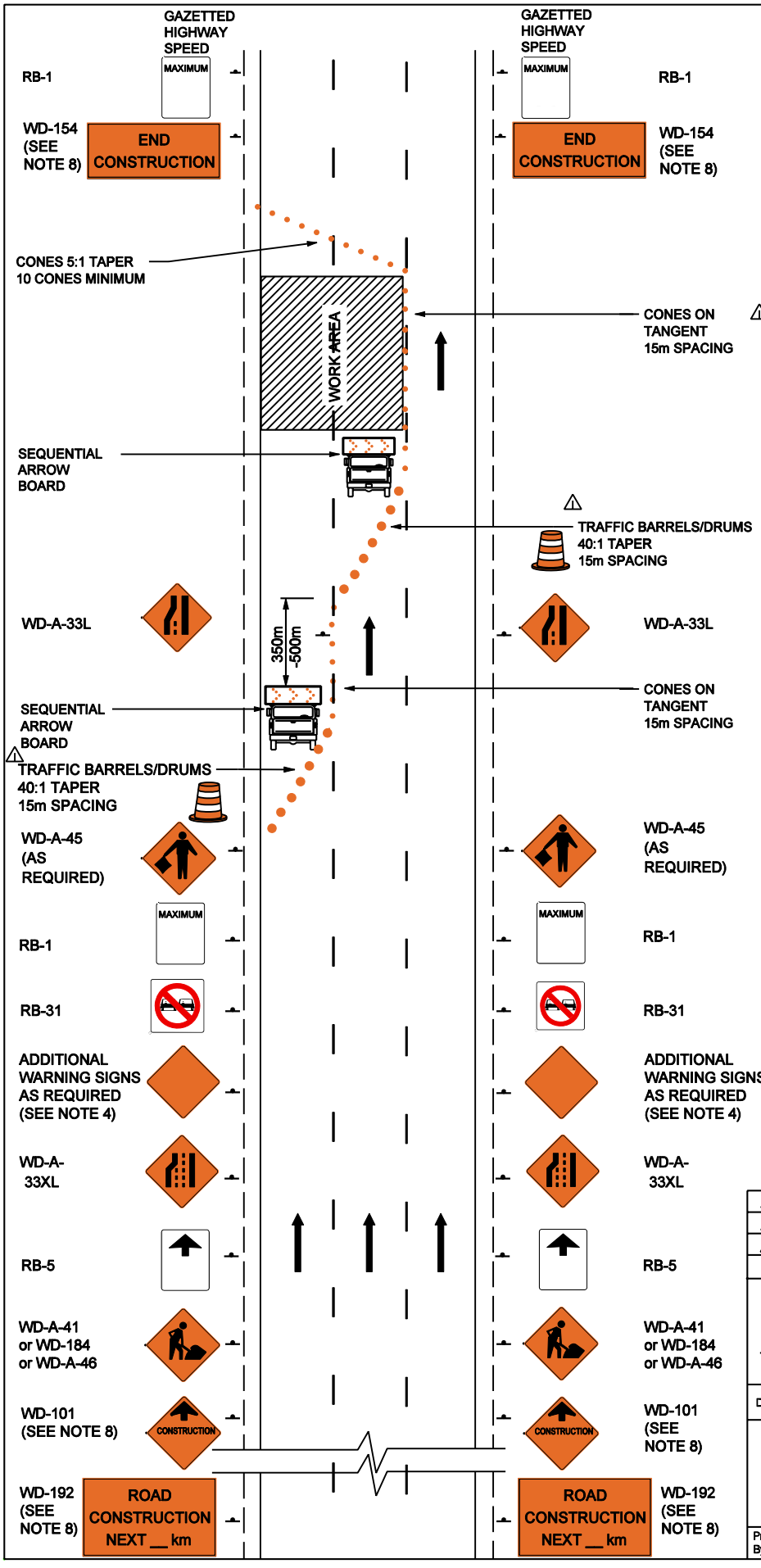
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS CENTRE AND RIGHT LANE CLOSURE

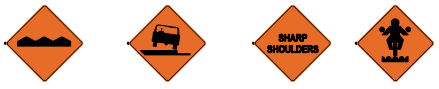
Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.3B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each nstance.
2. All sign spacing shall be 100m-150m unlessotherwise indicated.
3. Speed limit and warning signs shall be placed after every intersecting roadway throughout the work zone where there is a restricted speed zone.
4. Examples of additional warning signs that may be required in conjunction with this plan are:

WD-104 WD-150 WD-157



WD-A-22 WD-A-49 WD-A-100 WD-A-111

5. Other hazard signs as shown in the schedule of signs may be used as required.
6. Electronic variable message board is required when average summer daily traffic (ASDT) volume exceeds 10,000 vehicles per day or when sight distance is restricted.
7. WD-192 shall be erected 2km in advance or the distance may be adjusted due to site specific requirements of the project. Distance tab to include project length plus setback from project limit.
8. WD-192, WD-101, WD-154 signs are not required for short duration work.
9.

WD-184 WD-A-46

No.	REVISIONS	BY	DATE
3			
2			
1	Title block and notes updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

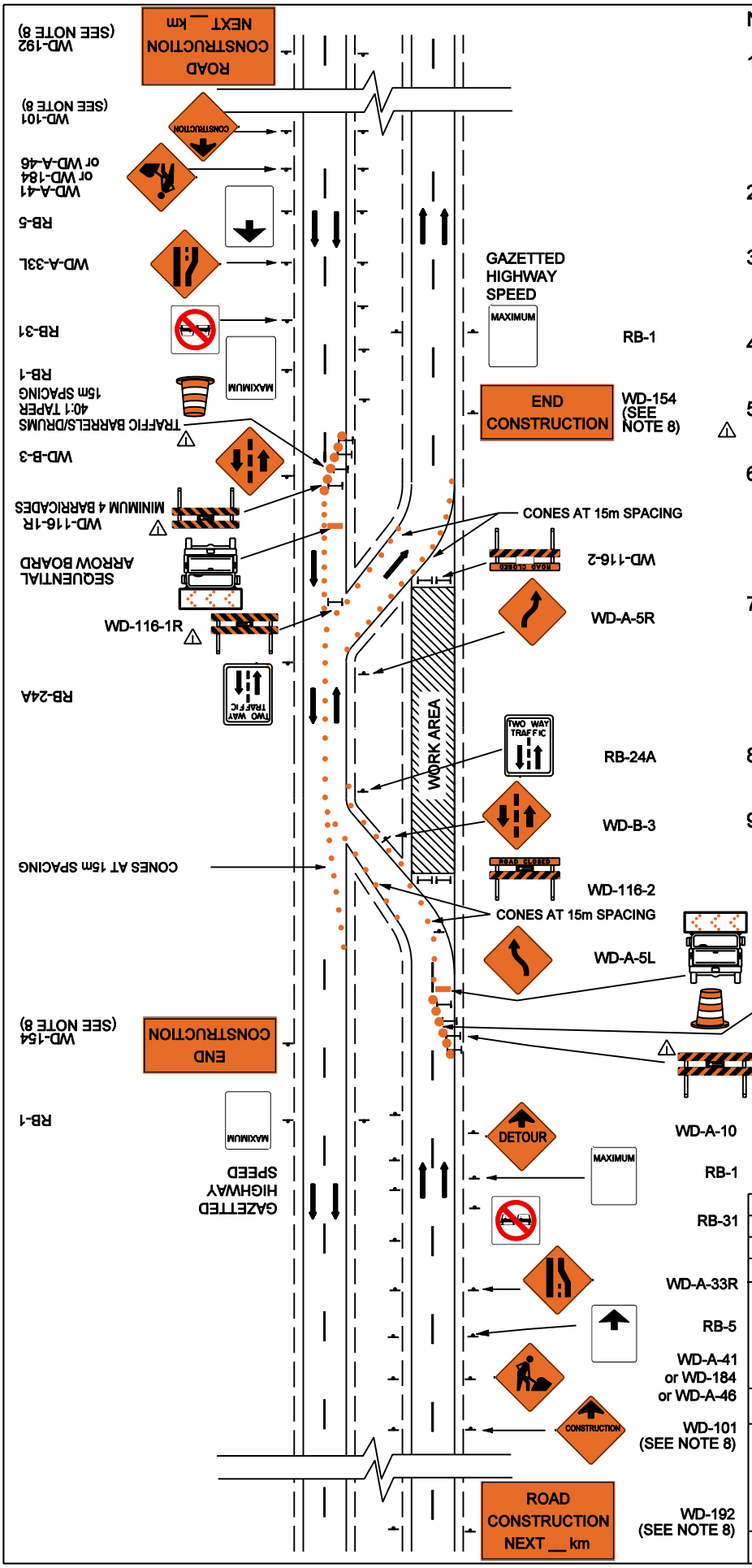
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS CENTRE AND LEFT LANE CLOSURE 1

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.4B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Radius of crossover detour shall be adequate to accommodate multi-trailer trucks.
4. Typical signing is required in the median in both directions.
5. During darkness, Type "C" steady burn lights shall be on all Traffic barrels/drums.
6. Electronic variable message board is required when average summer daily traffic (ASDT) volume exceeds 10,000 vehicles per day or when sight distance is restricted.
7. WD-192 shall be erected 2km in advance or the distance may be adjusted due to site specific requirements of the project. Distance tab to include project length plus setback from project limit.
8. WD-192, WD-101, WD-154 signs are not required for short duration work.
9. WD-184 WD-A-46

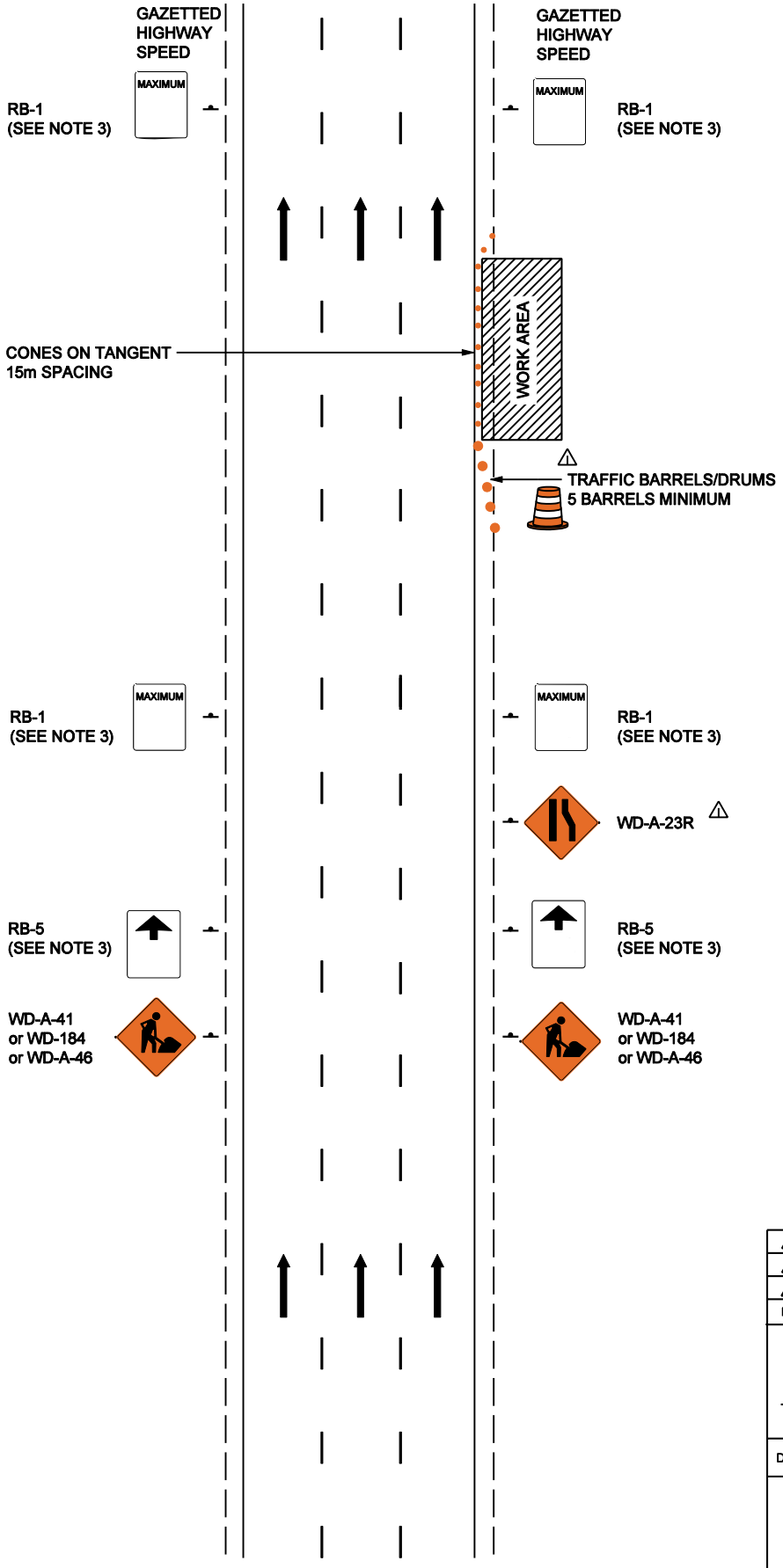
No.	REVISIONS	BY	DATE
3			
2			
1	Title block, notes updated and flashers eliminated.	JM	Dec 31/07

Approved:
ORIGINAL SIGNED BY ALLAN KWAN
Executive Director, Technical Standards Branch
Date: MARCH, 2003

Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS DETOUR FOUR LANE TO OPPOSING TRAFFIC

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.5B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. RB-5 and RB-1 signs will be required where a reduced speed zone is in place.
4. 

WD-184 WD-A-46
5. Delineators/Cones shall be placed at 15m spacing. If the drop-off has slope flatter than 3:1, cones are not required.

No.	REVISIONS	BY	DATE
3			
2			
1	Title block, notes updated and sign added.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS ⚠ WORK ON SHOULDER

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.6B

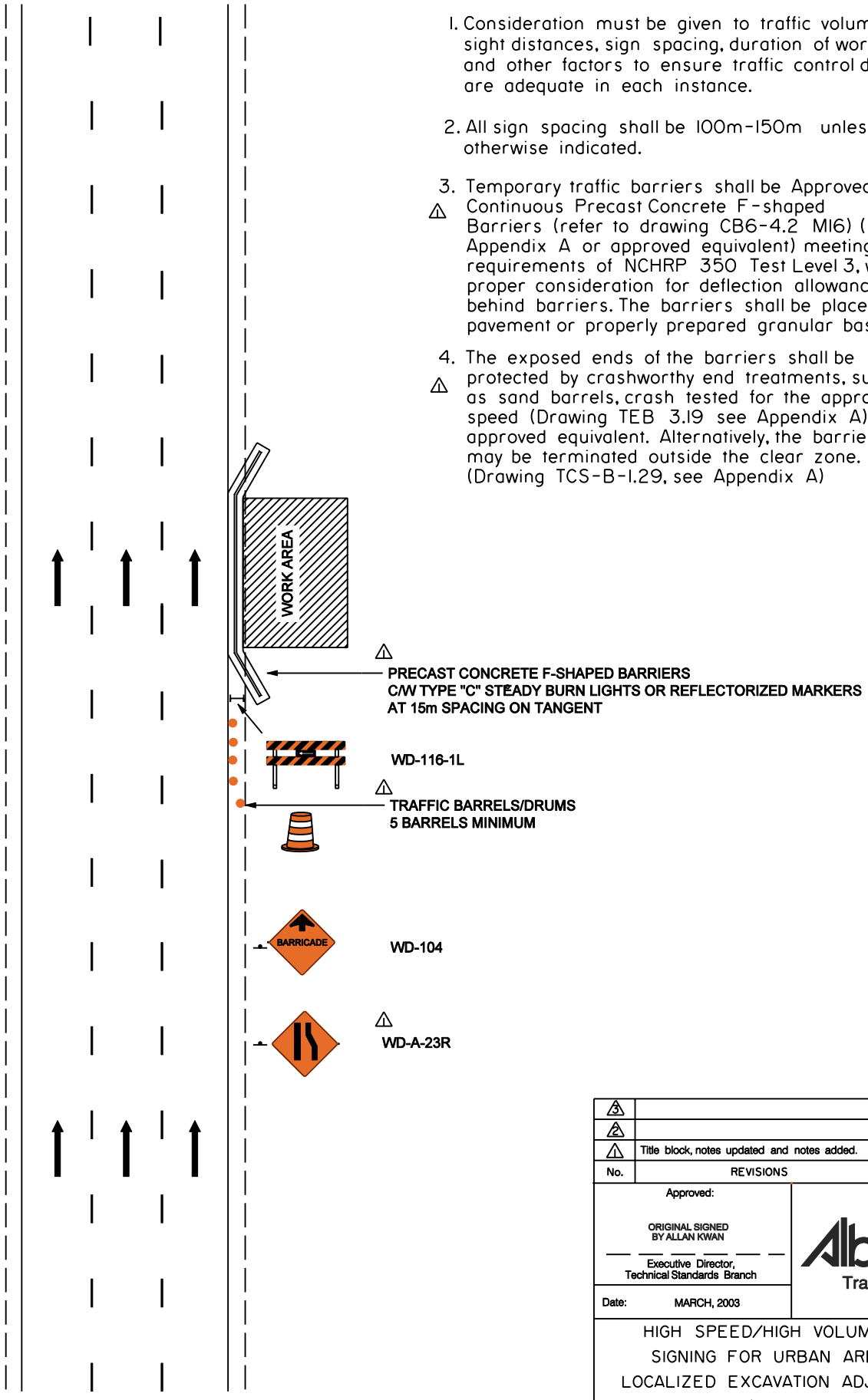
NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 100m-150m unless otherwise indicated.

3. ⚠1 Temporary traffic barriers shall be Approved Continuous Precast Concrete F-shaped Barriers (refer to drawing CB6-4.2 M16) (see Appendix A or approved equivalent) meeting the requirements of NCHRP 350 Test Level 3, with proper consideration for deflection allowance behind barriers. The barriers shall be placed on pavement or properly prepared granular base.

4. ⚠1 The exposed ends of the barriers shall be protected by crashworthy end treatments, such as sand barrels, crash tested for the appropriate speed (Drawing TEB 3.19 see Appendix A), or approved equivalent. Alternatively, the barriers may be terminated outside the clear zone. (Drawing TCS-B-1.29, see Appendix A)



No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Title block, notes updated and notes added.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

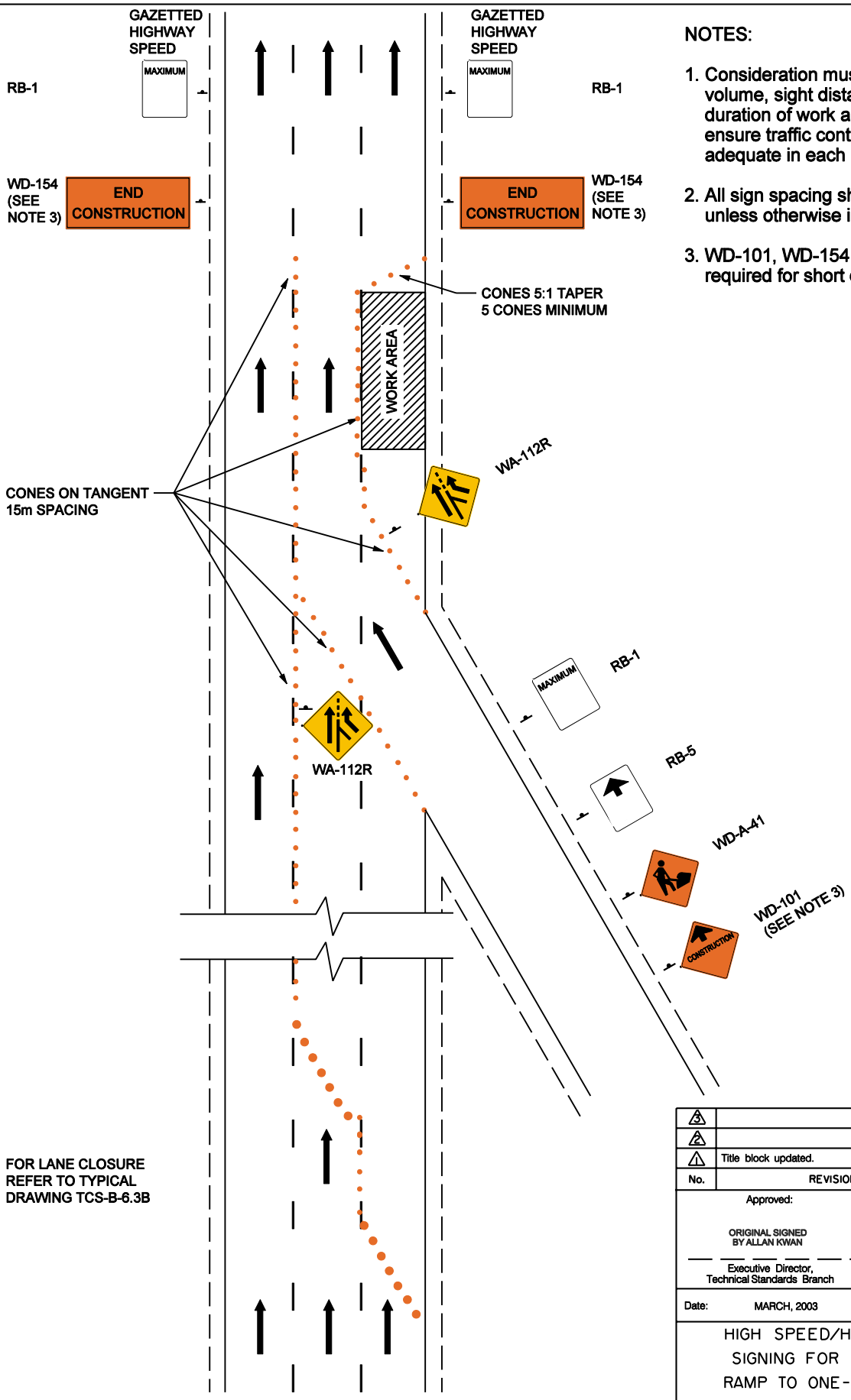
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS LOCALIZED EXCAVATION ADJACENT TO SHOULDER (WITHIN WORK ZONE) ⚠1

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.7B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. WD-101, WD-154 signs are not required for short duration work.

No.	REVISIONS	BY	DATE
3			
2			
1	Title block updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

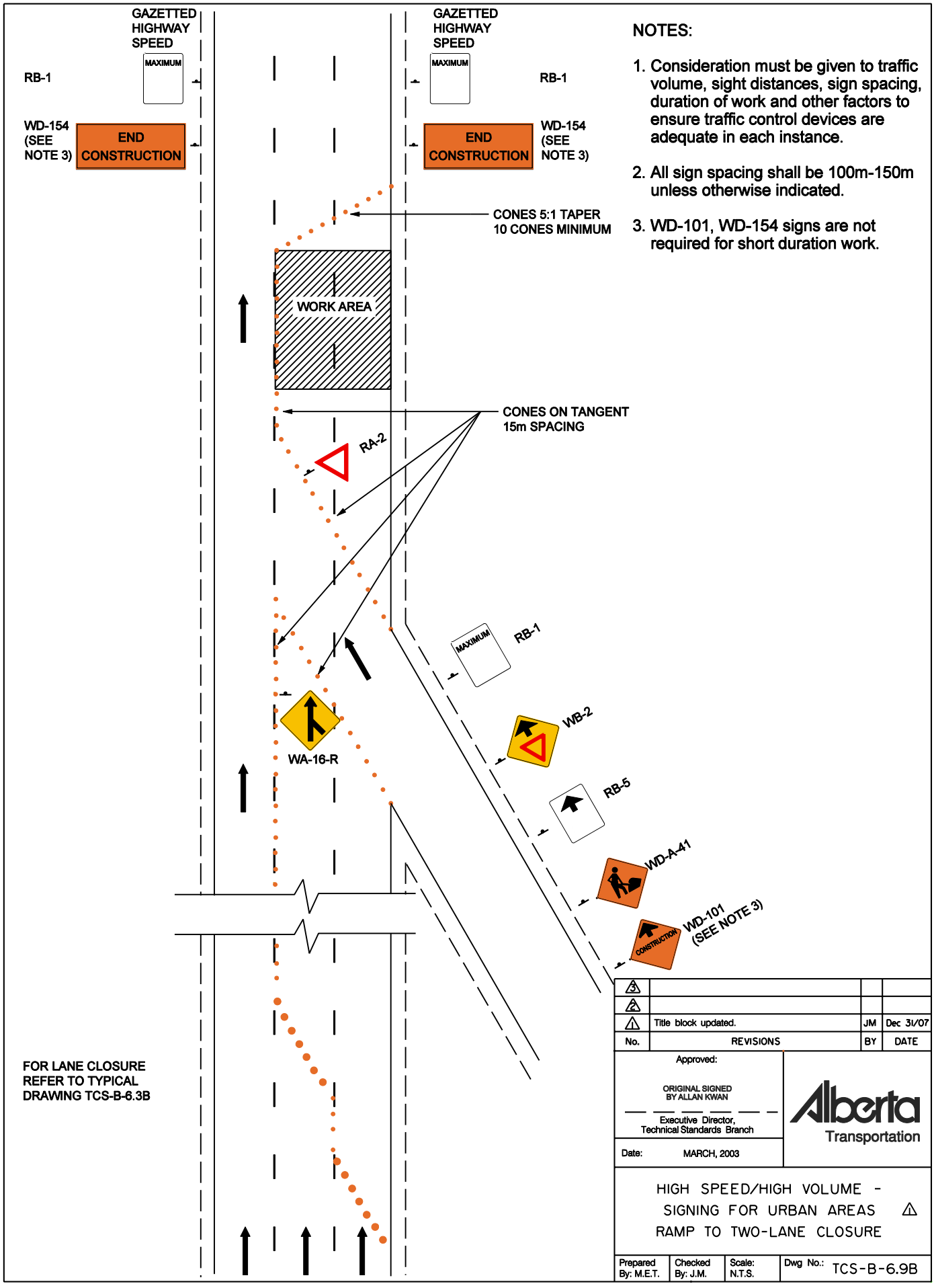
Date: MARCH, 2003

Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS RAMP TO ONE-LANE CLOSURE (FREE FLOW)

1

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.8B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. WD-101, WD-154 signs are not required for short duration work.

FOR LANE CLOSURE REFER TO TYPICAL DRAWING TCS-B-6.3B

No.	REVISIONS	BY	DATE
3			
2			
1	Title block updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

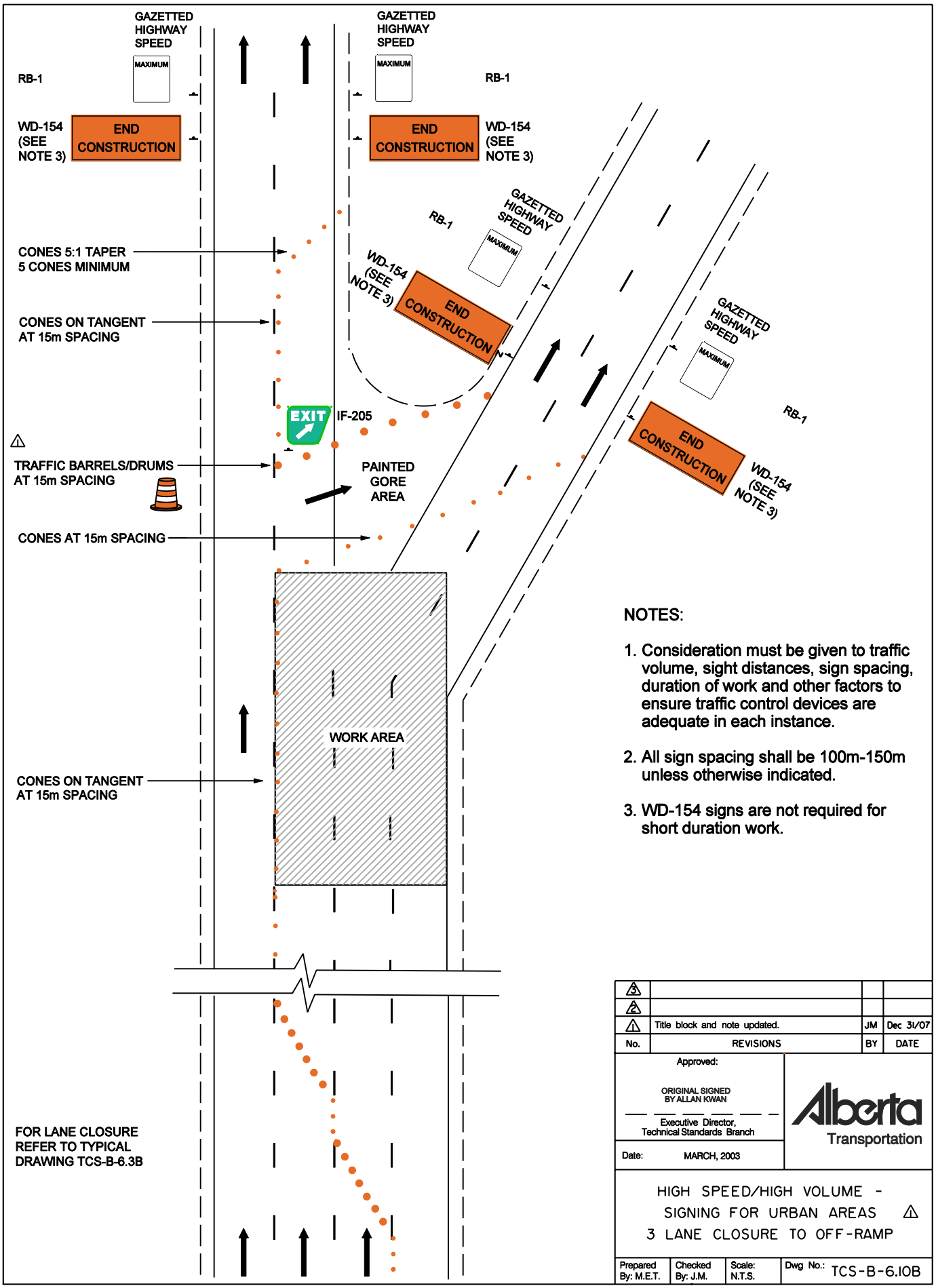
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS ⚠ RAMP TO TWO-LANE CLOSURE

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.9B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. WD-154 signs are not required for short duration work.

No.	REVISIONS	BY	DATE
3			
2			
1	Title block and note updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

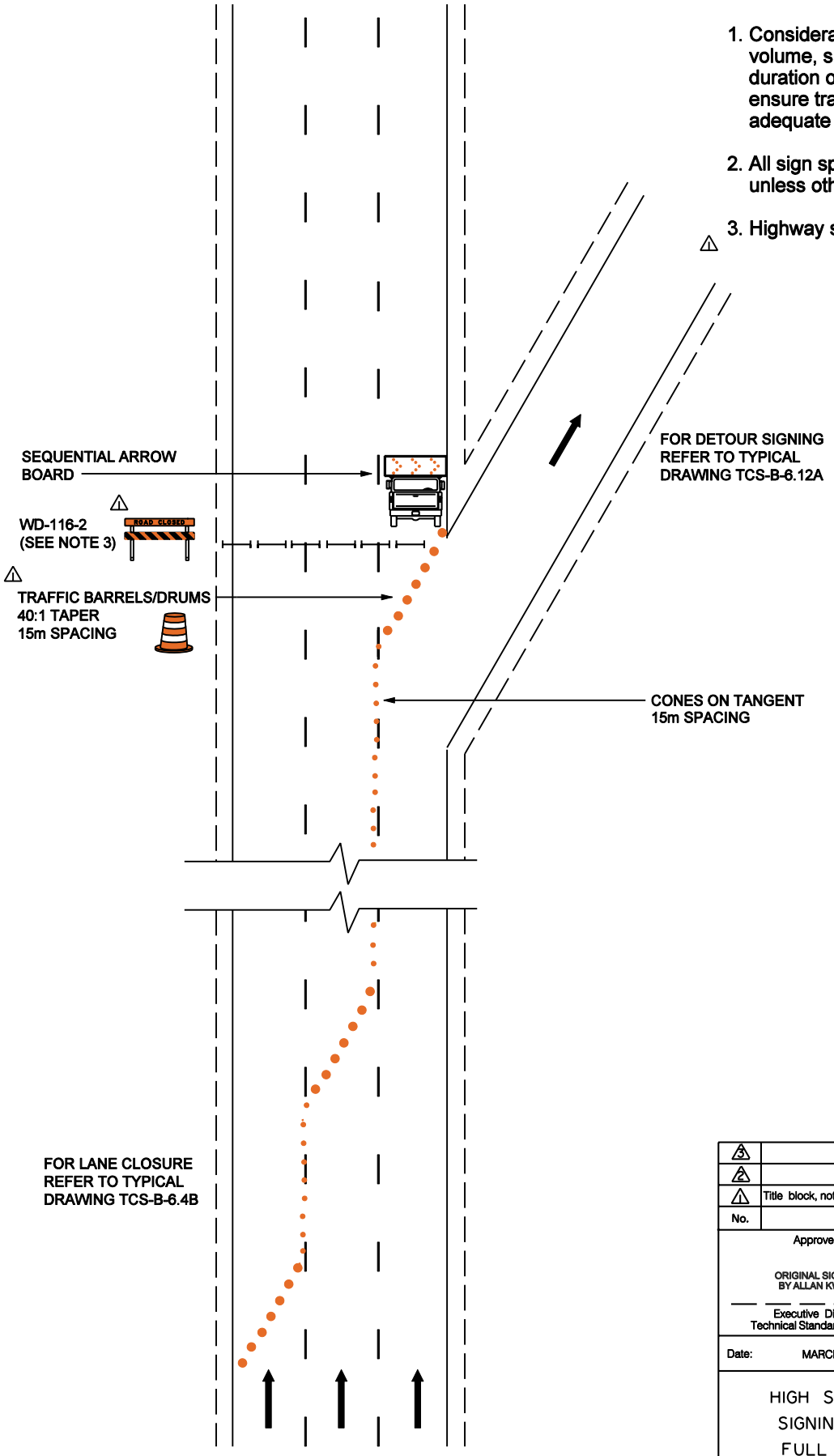
Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS ⚠ 3 LANE CLOSURE TO OFF-RAMP

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.10B

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Highway shall be completely barricaded.



No.	REVISIONS	BY	DATE
3			
2			
1	Title block, notes updated and flashers eliminated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

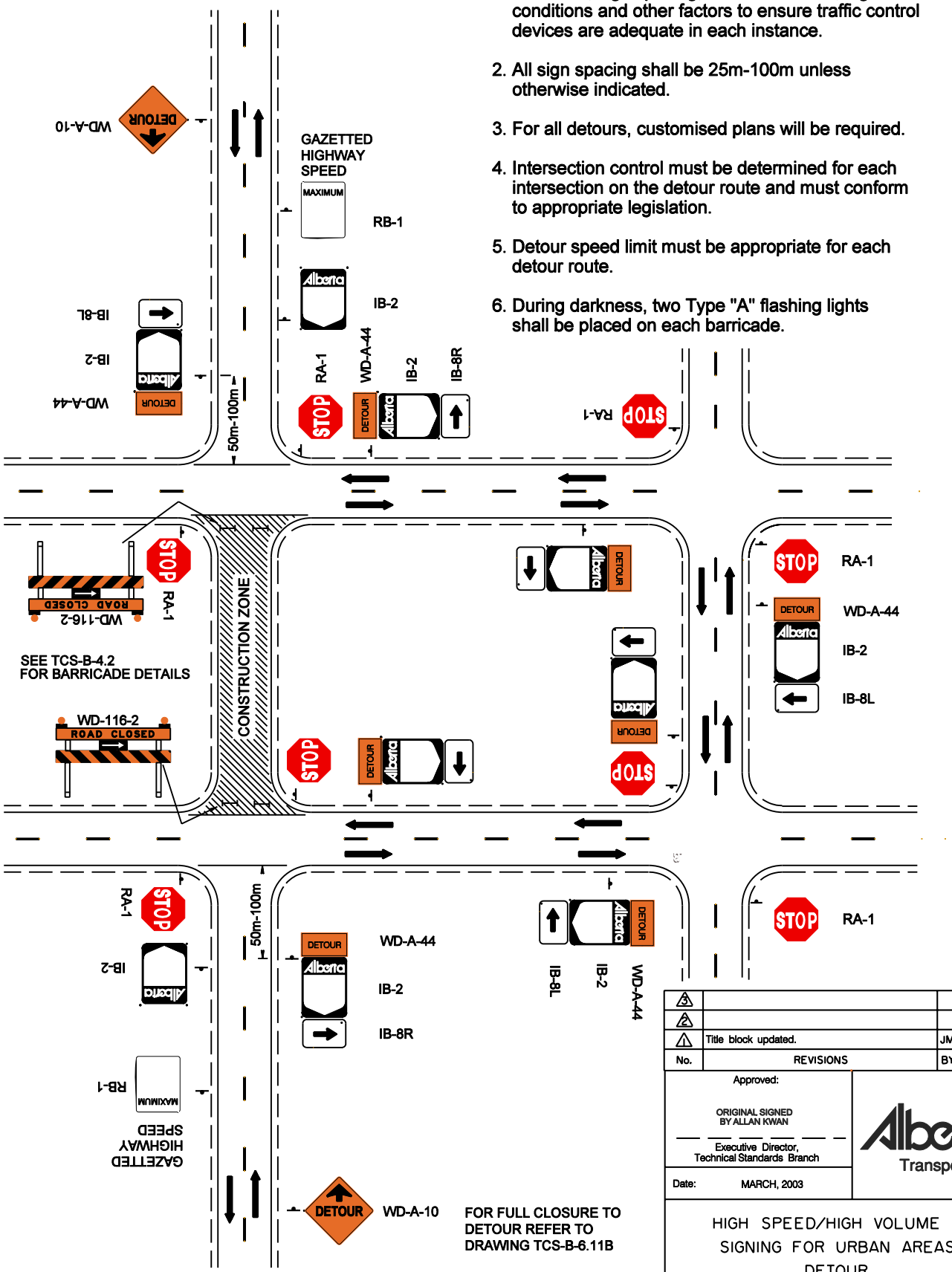
Alberta Transportation

HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS FULL CLOSURE TO DETOUR 1

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.IIB

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. For all detours, customised plans will be required.
4. Intersection control must be determined for each intersection on the detour route and must conform to appropriate legislation.
5. Detour speed limit must be appropriate for each detour route.
6. During darkness, two Type "A" flashing lights shall be placed on each barricade.



No.	REVISIONS	BY	DATE
3			
2			
1	Title block updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

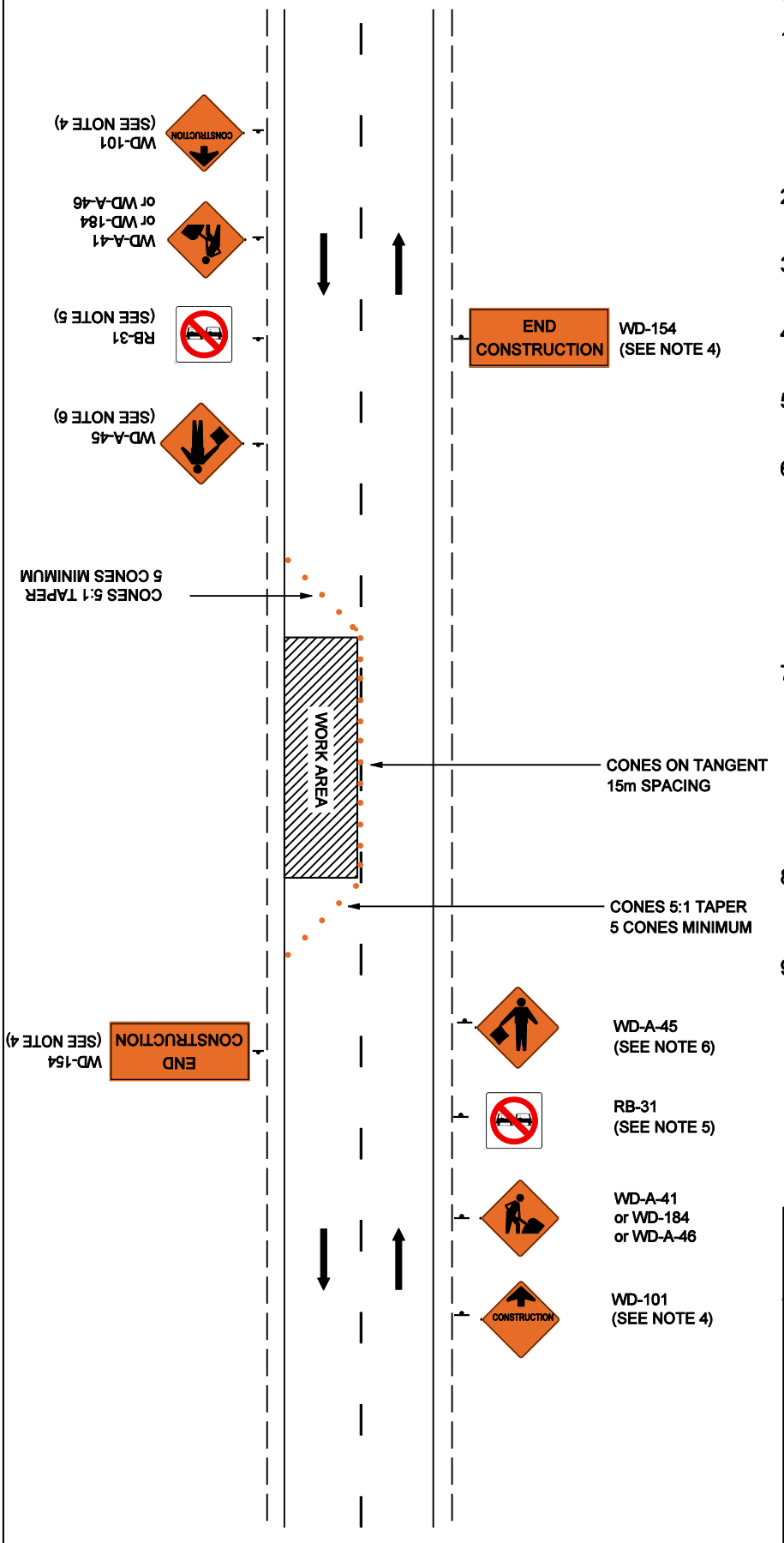
HIGH SPEED/HIGH VOLUME - SIGNING FOR URBAN AREAS DETOUR

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-6.12A

TRAFFIC ACCOMMODATION IN WORK ZONES

LIST OF DRAWINGS

LOW SPEED/LOW VOLUME			
7.1A	X		One Lane Closure (One Lane Alternating Traffic)
7.2B		X	Right Lane Closure
7.3A	X		Work on Shoulder
7.3B		X	Work on Shoulder
7.4A	X		Shoulder Drop-Off (Within Work Zone)
7.4B		X	Shoulder Drop-Off (Within Work Zone)
7.5A	X		lntersecting Roads
7.5B		X	lntersecting Roads
7.6A	X		Work on Centreline Two Lane Traffic
7.7A	X		Detour
7.8A	X		Embankment and Fixed Objects
7.8B		X	Embankment and Fixed Objects
7.9A	X		One Lane Closure (One Lane Alternating Traffic)
7.9B		X	One Lane Closure
7.10B		X	Two Lane Closure with 2-Way Traffic



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 25m-100m unless otherwise indicated.

3. For mobile operation, cones may not be required.

4. WD-101 and WD-154 sign not required for short duration work.

5. RB-31 sign not required when existing solid yellow barrier line is in place.

6. WD-194 sign, together with RA-2 sign, may be used instead of WD-A-45 sign and flagperson if sight distance is adequate.

RA-2

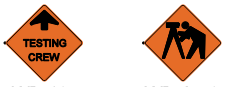
WD-194

7. RB-5 and RB-1 signs will be used when a reduced speed zone is required. In this case gazetted speed to be posted after the work area.

RB-5 RB-1

8. Other hazard signs as shown in the schedule of signs may be used as required.

9.



WD-184 WD-A-46

No.	REVISIONS	BY	DATE
3			
2			
1	Title block updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

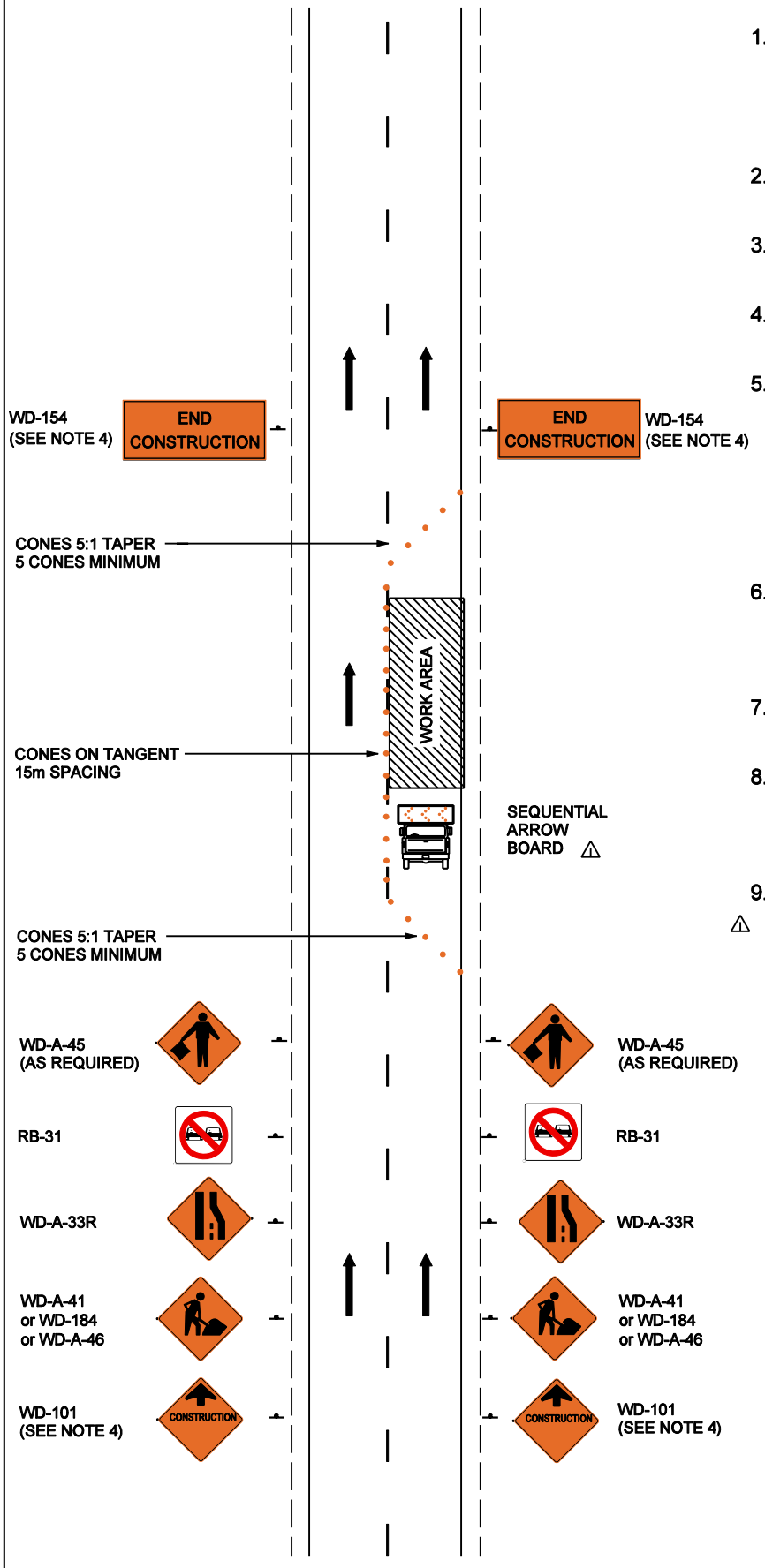
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS ONE LANE CLOSURE (ONE LANE ALTERNATING TRAFFIC) TWO LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.IA



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. For mobile operation, cones may not be required.
4. WD-101 and WD-154 signs not required for short duration work.
5. RB-5 and RB-1 signs will be used when a reduced speed zone is required. In this case gazetted speed to be posted after the work area.

RB-5 RB-1

6. If construction operation is occurring on the opposite travel lanes, then applicable construction signing will also be required on those lanes.
7. Other hazard signs as shown in the schedule of signs may be used as required.
8.

WD-184 WD-A-46

9. The Sequential Arrow Board should be located in the centre of the closed lane. ⚠

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Title block updated, barricade removed and sequential arrow board and note added.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED
BY ALLAN KWAN

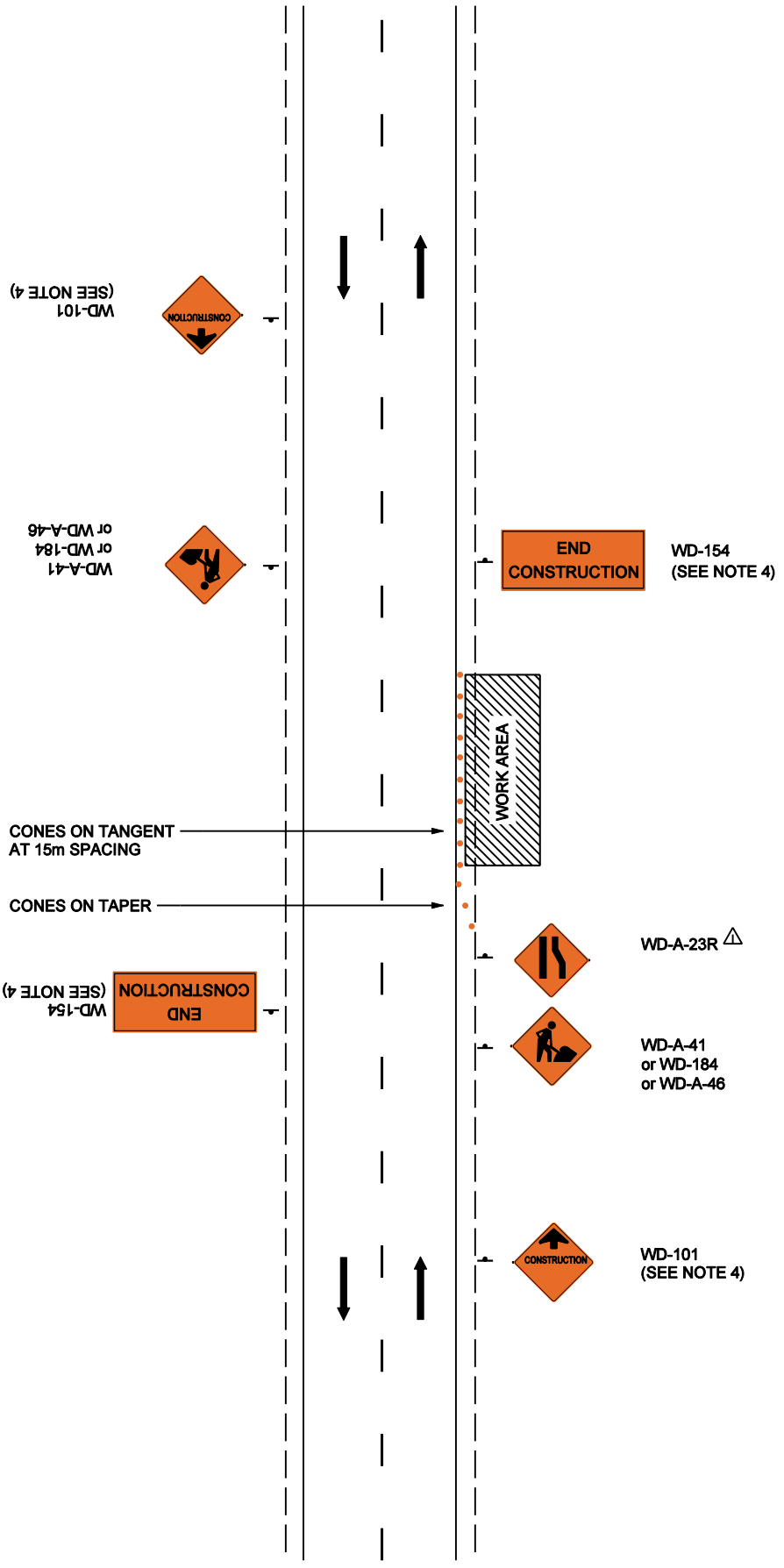
Executive Director,
Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS
RIGHT LANE CLOSURE
FOUR LANE DIVIDED HIGHWAY ⚠

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.2B

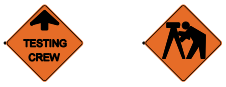


NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. For mobile operation, cones may not be required.
4. WD-101 and WD-154 signs not required for short duration work.
5. RB-5 and RB-1 signs will be used when a reduced speed zone is required. In this case gazetted speed to be posted after the work area.

RB-5 RB-1

6. Other hazard signs as shown in the schedule of signs may be used as required.
7.



WD-184 WD-A-46

No.	REVISIONS	BY	DATE
3			
2			
1	Title block updated and sign added.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

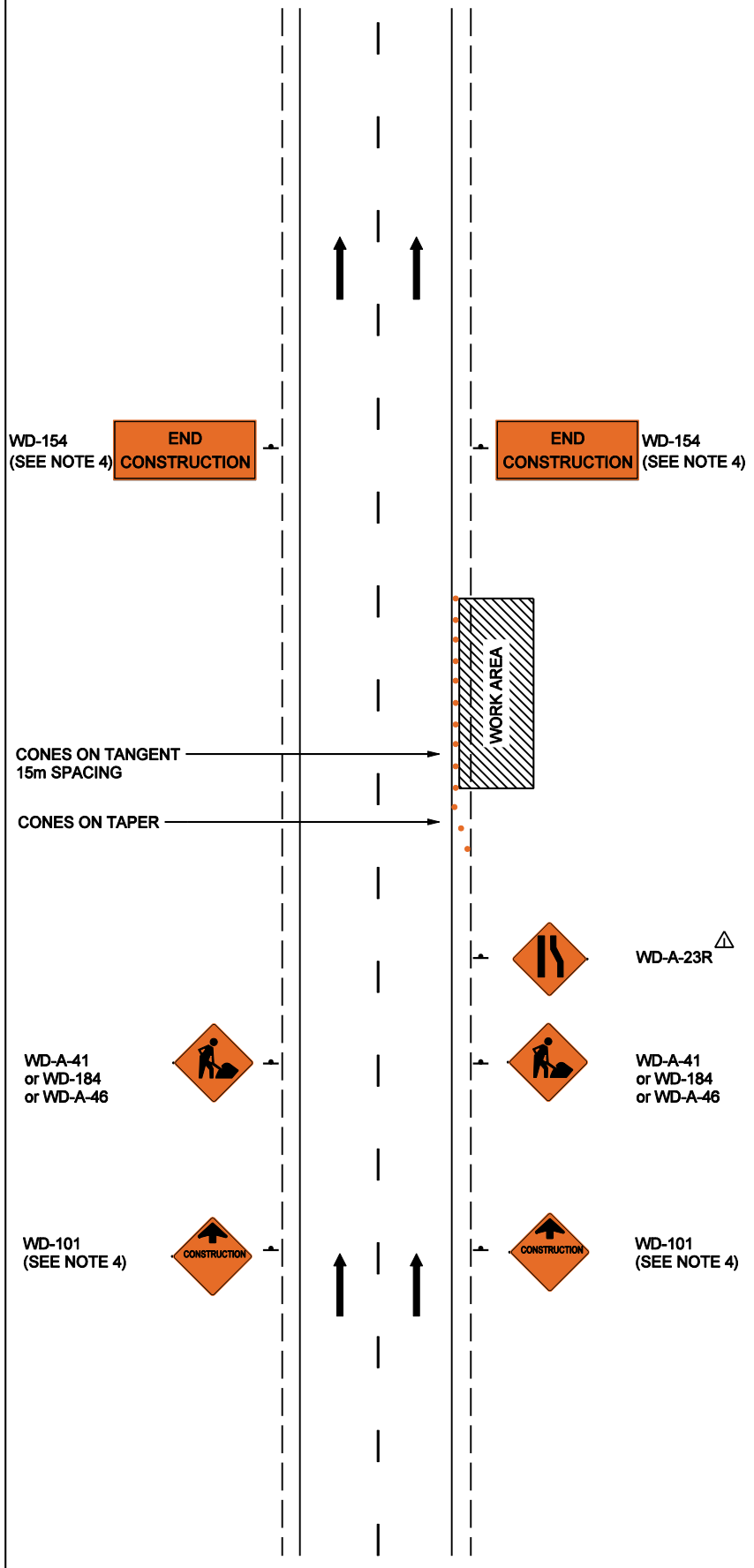
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS WORK ON SHOULDER TWO LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.3A

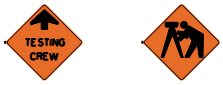


NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. For mobile operation, cones may not be required.
4. WD-101 and WD-154 signs not required for short duration work.
5. RB-5 and RB-1 signs will be used when a reduced speed zone is required. In this case gazetted speed to be posted after the work area.

RB-5 RB-1

6. If construction operation is occurring on the opposite travel lane, then applicable construction signing will also be required on those lanes.
7. Other hazard signs as shown in the schedule of signs may be used as required.
8.



WD-184 WD-A-46

No.	REVISIONS	BY	DATE
3			
2			
1	Title block, notes updated and sign added	JM	Dec 31/07

Approved:

ORIGINAL SIGNED
BY ALLAN KWAN

Executive Director,
Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS WORK ON SHOULDER FOUR LANE DIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.3B

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 25m-100m unless otherwise indicated.

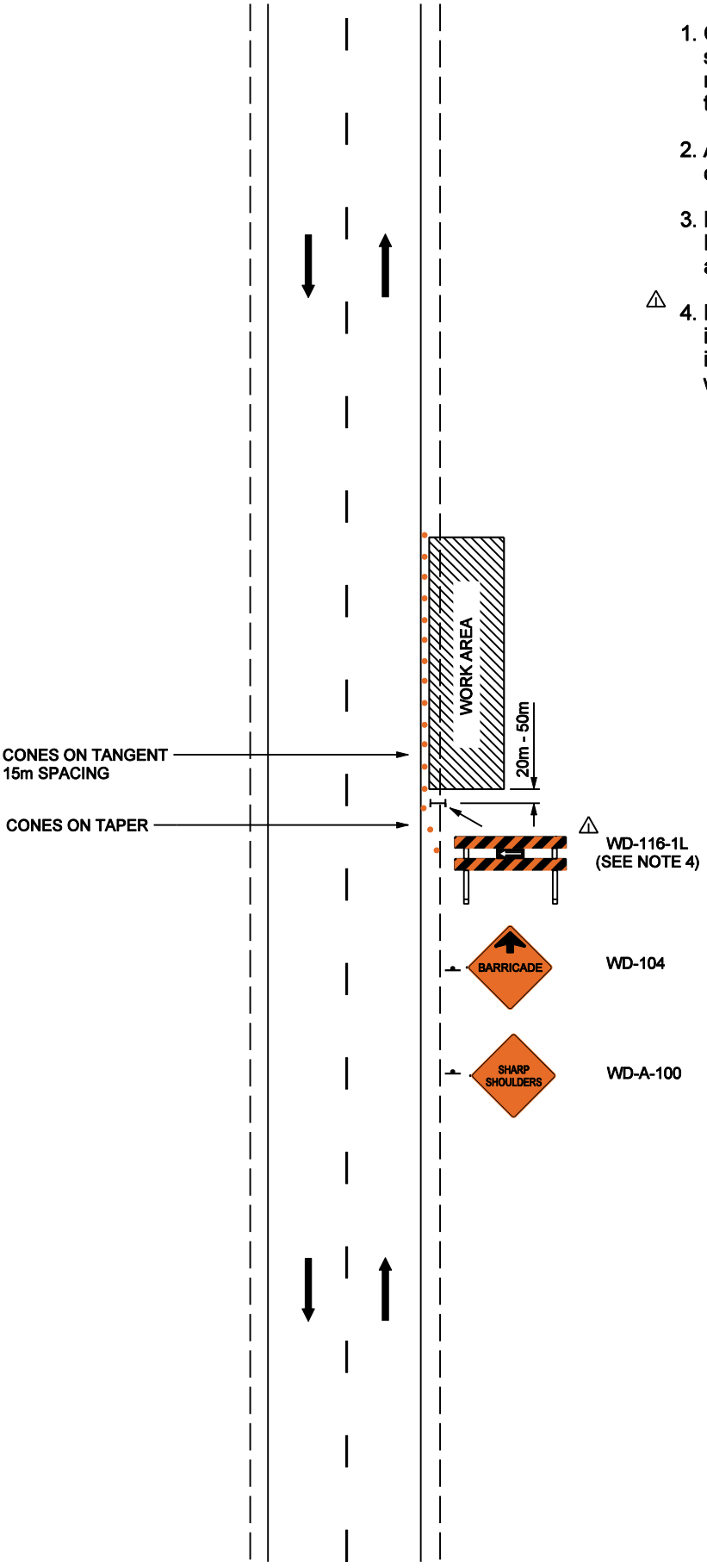
3. Delineators/Cones shall be placed at 15m spacing. If the drop-off has a slope flatter than 3:1, cones are not required.

⚠1 4. Light-duty barricades, WD-116-4L may be used instead of WD-116-1L and WD-116-4R may be used instead of WD-116-1R, when space is limited or where curbs/gutters are present.

⚠1

WD-116-4L

WD-116-4R



No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Title block updated, note added and flasher eliminated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

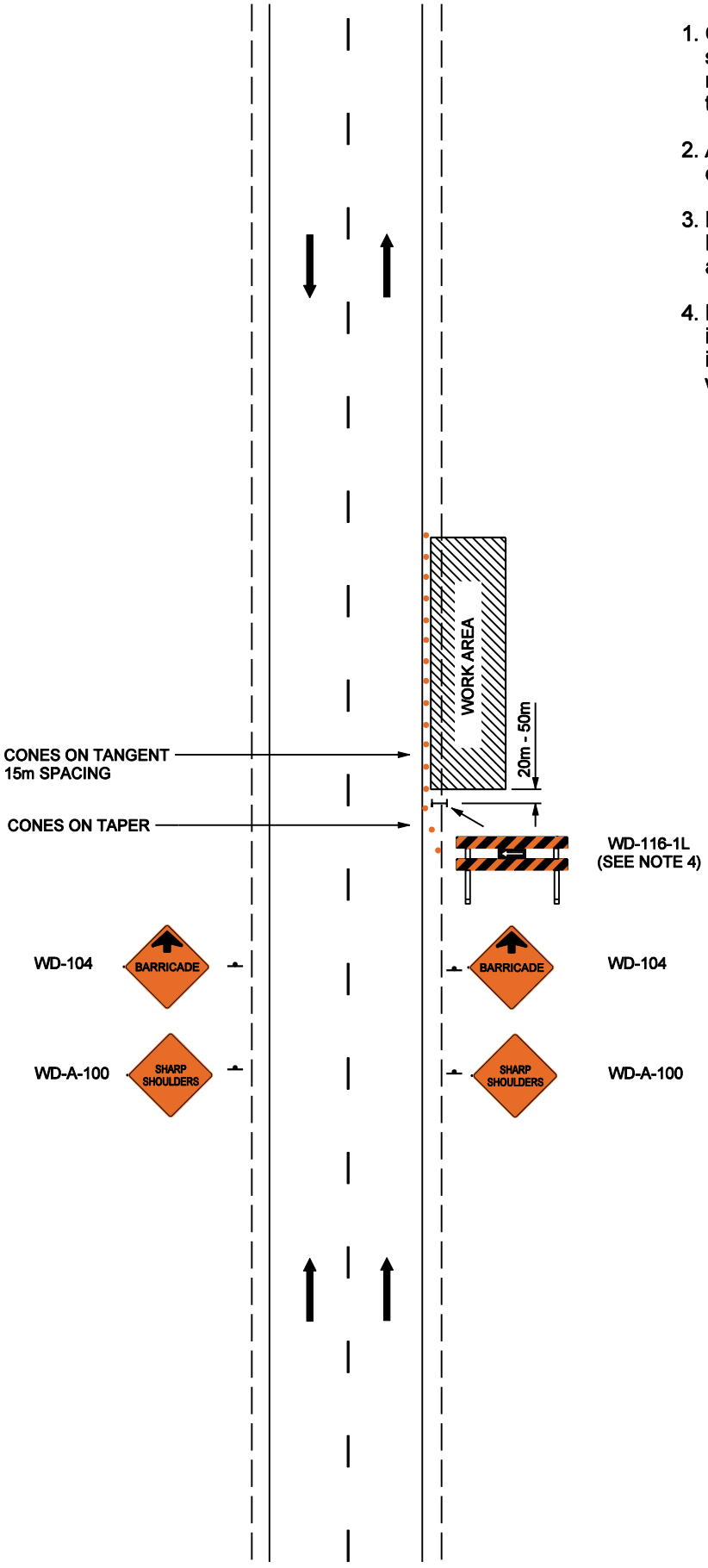
LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS ⚠1
SHOULDER DROP-OFF (WITHIN WORK ZONE)
TWO LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.4A

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. Delineators/Cones shall be placed at 15m spacing. If the drop-off has a slope flatter than 3:1, cones are not required.
4. Light-duty barricades, WD-116-4L may be used instead of WD-116-1L and WD-116-4R may be used instead of WD-116-1R, when space is limited or where curbs/gutters are present.

WD-116-4L WD-116-4R



No.	REVISIONS	BY	DATE
3			
2			
1			

Approved:
Original signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: OCTOBER, 2008

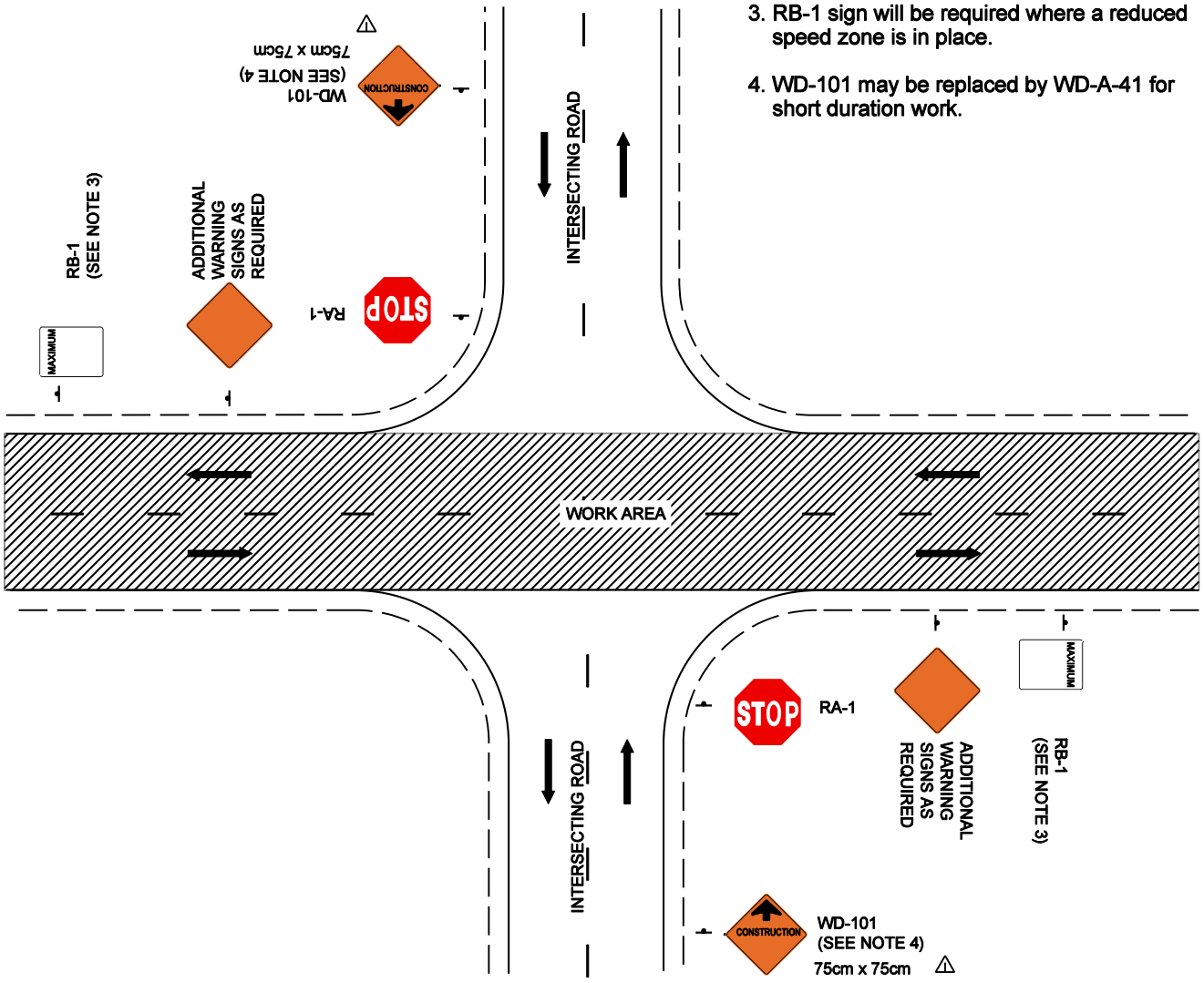
Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS SHOULDER DROP-OFF (WITHIN WORK ZONE) FOUR LANE DIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.4B

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. RB-1 sign will be required where a reduced speed zone is in place.
4. WD-101 may be replaced by WD-A-41 for short duration work.



No.	REVISIONS	BY	DATE
3			
2			
1	Title block updated and notes updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

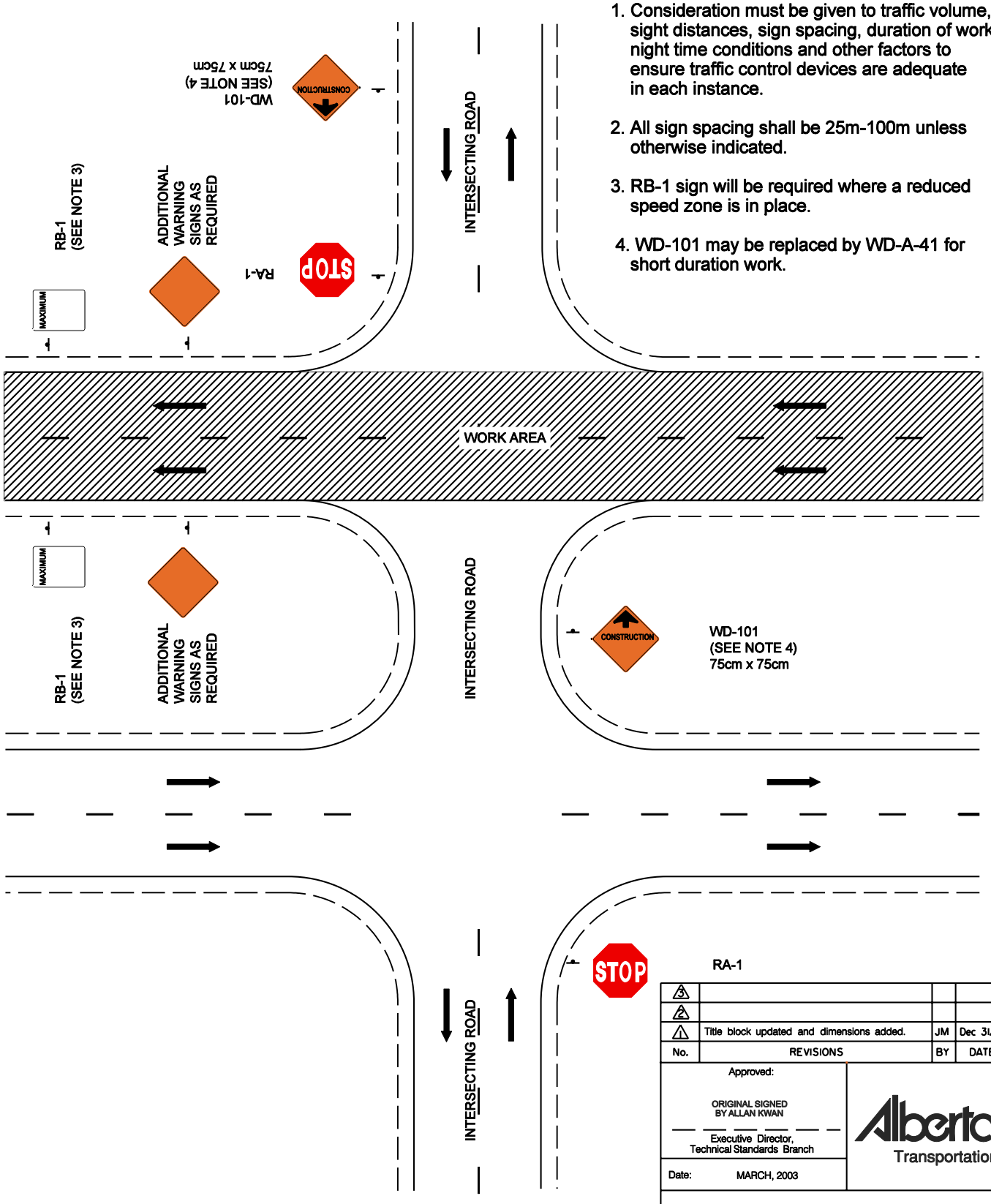
Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS INTERSECTING ROADS TWO LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.5A

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. RB-1 sign will be required where a reduced speed zone is in place.
4. WD-101 may be replaced by WD-A-41 for short duration work.



No.	REVISIONS	BY	DATE
1	Title block updated and dimensions added.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

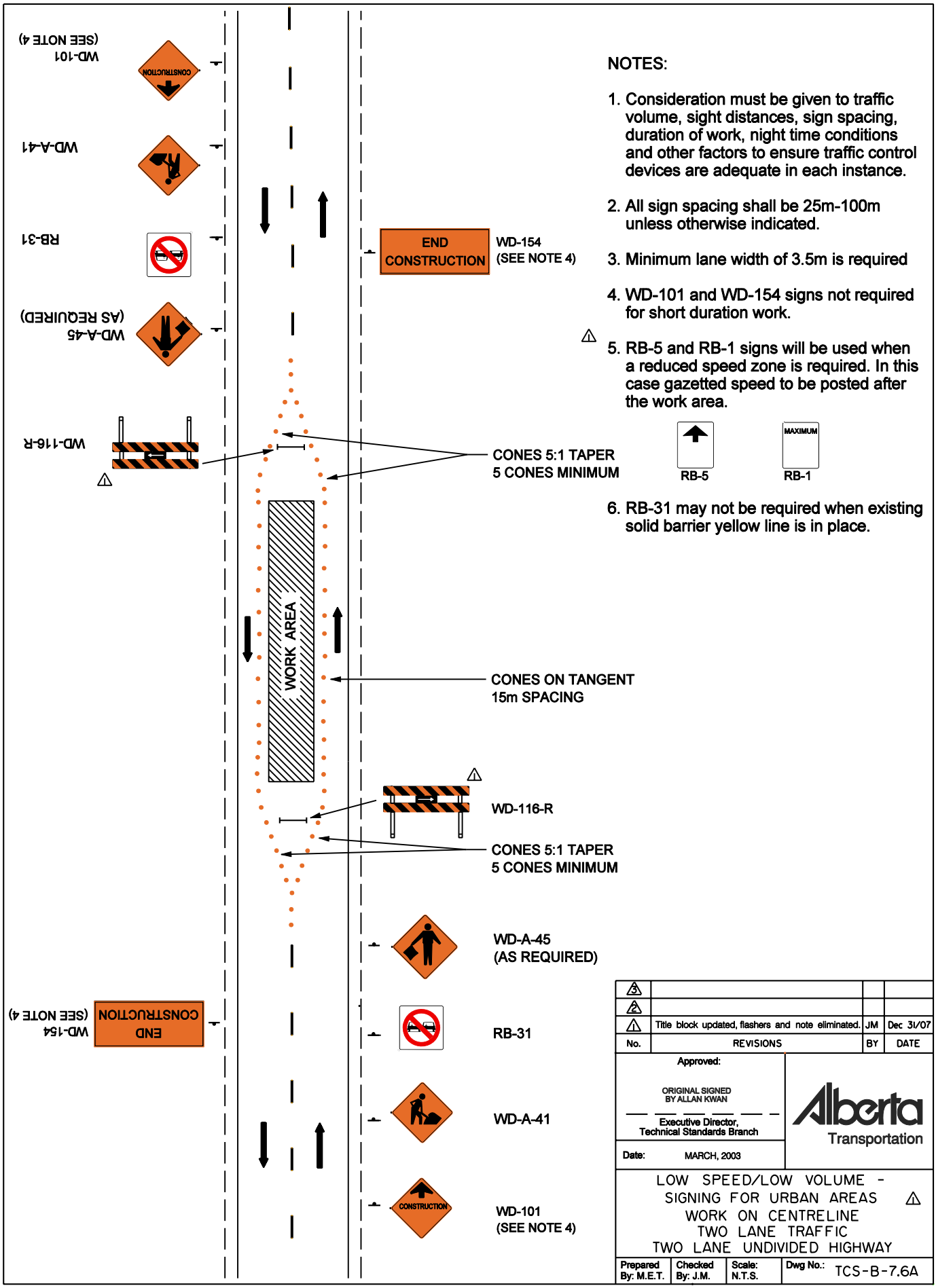
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS INTERSECTING ROADS FOUR LANE DIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.5B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. Minimum lane width of 3.5m is required
4. WD-101 and WD-154 signs not required for short duration work.
5. RB-5 and RB-1 signs will be used when a reduced speed zone is required. In this case gazetted speed to be posted after the work area.

RB-5 MAXIMUM RB-1

6. RB-31 may not be required when existing solid barrier yellow line is in place.

No.	REVISIONS	BY	DATE
3			
2			
1	Title block updated, flashers and note eliminated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

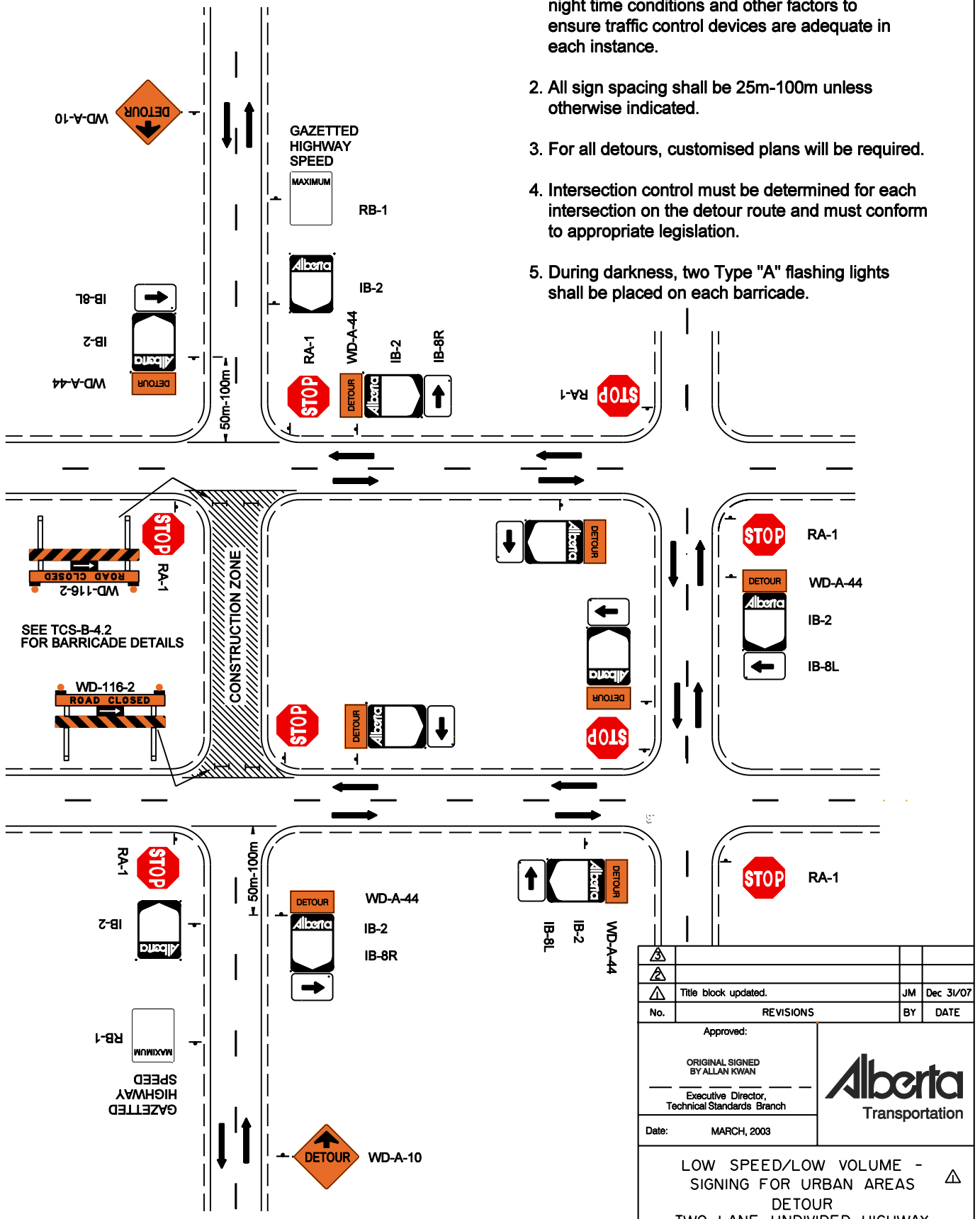
Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS WORK ON CENTRELINE TWO LANE TRAFFIC TWO LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.6A

NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. For all detours, customised plans will be required.
4. Intersection control must be determined for each intersection on the detour route and must conform to appropriate legislation.
5. During darkness, two Type "A" flashing lights shall be placed on each barricade.



No.	REVISIONS	BY	DATE
3			
2			
1	Title block updated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

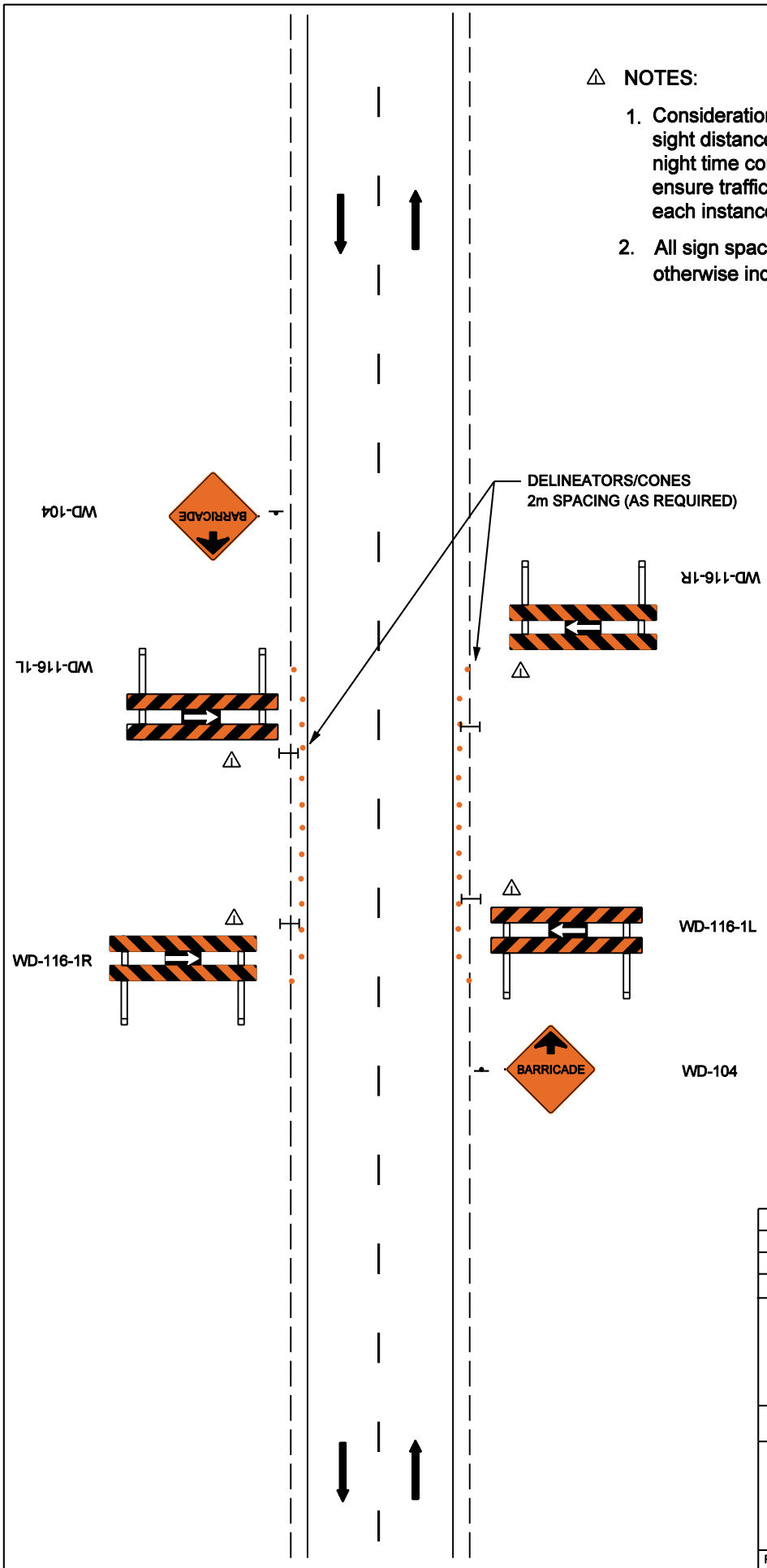
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS
DETOUR
TWO LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.7A



⚠ NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Title block updated and flashers, note eliminated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

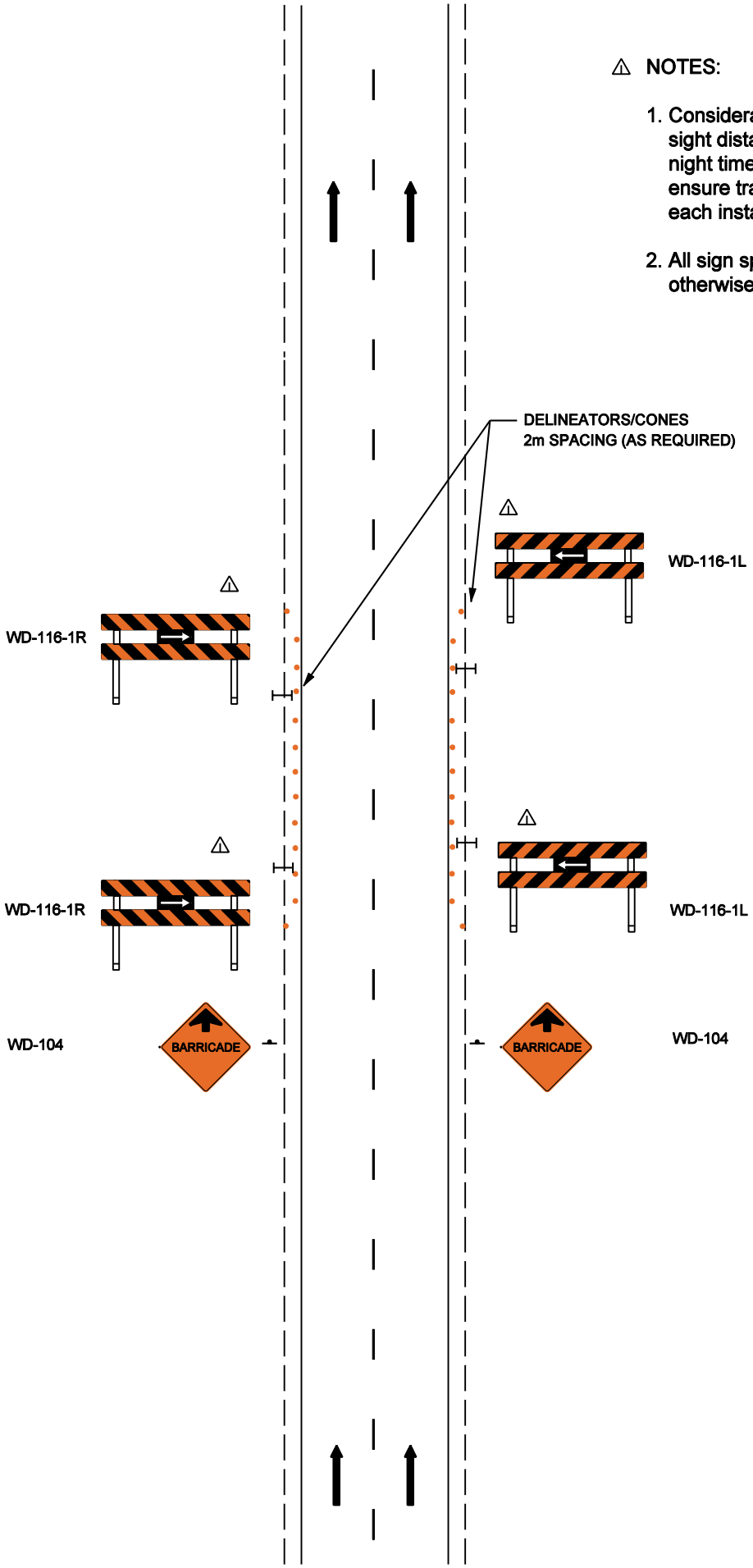
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS EMBANKMENT AND FIXED OBJECTS TWO LANE UNDIVIDED HIGHWAY ⚠

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.8A



⚠ NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.

2. All sign spacing shall be 25m-100m unless otherwise indicated.

No.	REVISIONS	BY	DATE
⚠3			
⚠2			
⚠1	Title block updated and flashers, note eliminated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

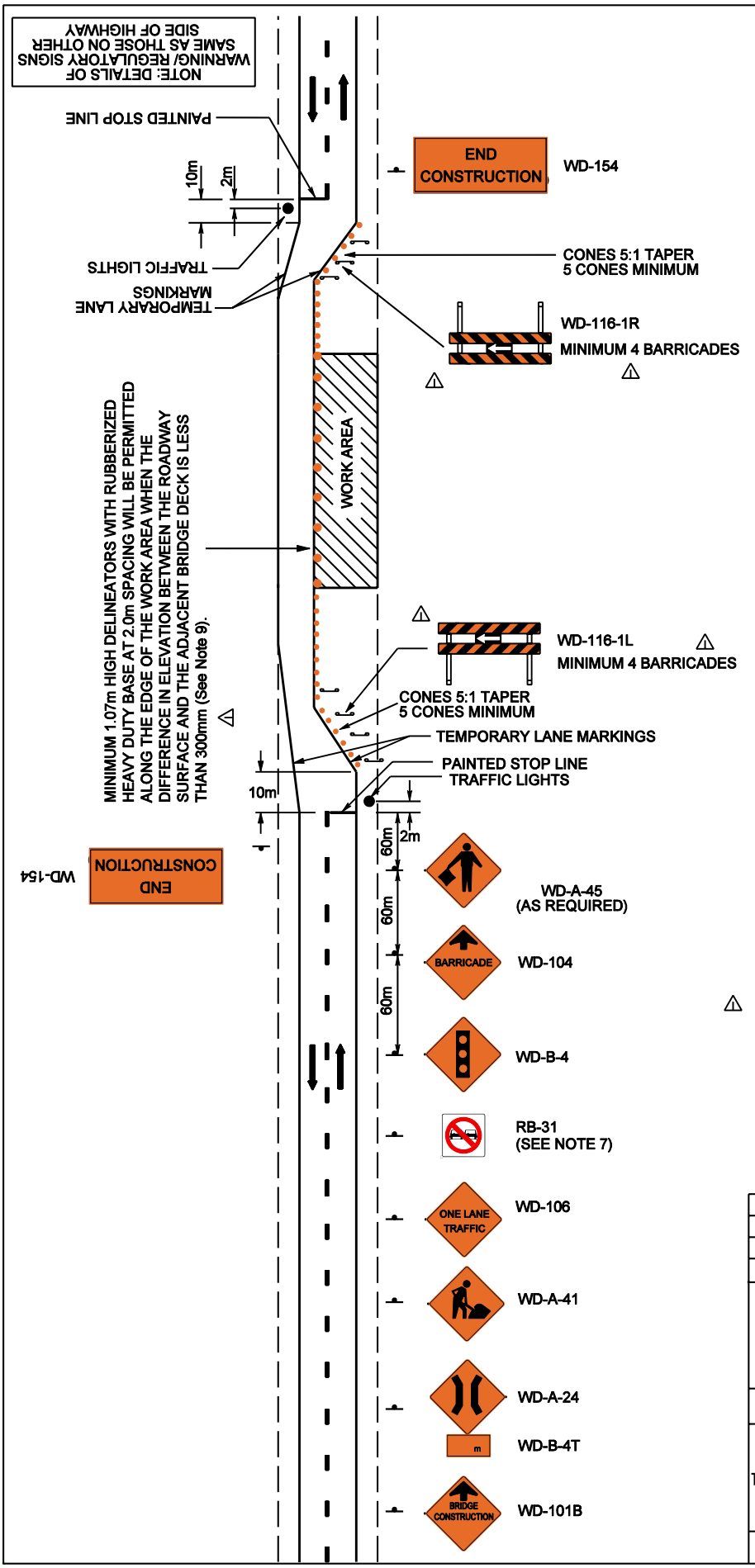
Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS EMBANKMENT AND FIXED OBJECTS FOUR LANE DIVIDED HIGHWAY ⚠

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.8B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. When switching traffic during staged construction, a specialized traffic accommodation plan is required.
3. All sign spacing shall be 25m-100m unless otherwise indicated
4. Traffic lights shall be 300mm diameter.
5. A minimum lane width of 3.5m is required.
6. RB-31 sign not required when existing solid yellow barrier line is in place.
7. RB-5 and RB-1 signs will be used when a reduced speed zone is required. In this case gazetted speed to be posted after the work area.

RB-5 RB-1 (MAXIMUM)

8. WD-194 sign, together with RA-2 sign, may be used instead of WD-A-45/traffic light if sight distance is adequate.

RA-2
WD-194 (TO ONCOMING TRAFFIC)

9. If the drop off is greater than 300mm use drawing TCS-B-1.27A (Long Duration).

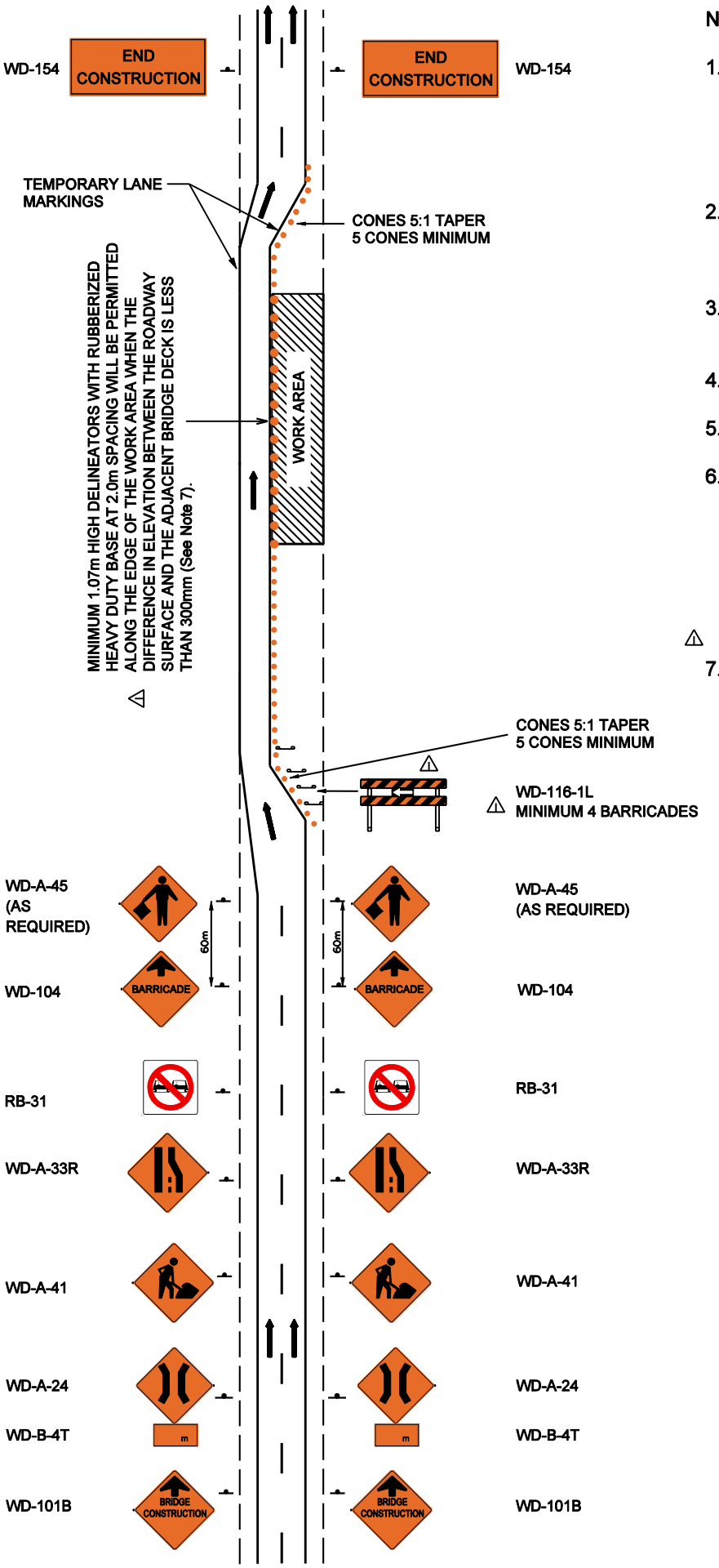
No.	REVISIONS	BY	DATE
3			
2			
1	Title block and notes updated, note added and flasher eliminated.	JM	Dec 31/07

Approved:
ORIGINAL SIGNED BY ALLAN KWAN
Executive Director, Technical Standards Branch
Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS 1
TYPICAL EXCAVATION SIGNING FOR URBAN AREAS
(ONE LANE ALTERNATING TRAFFIC)
TWO LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.9A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.

2. When switching traffic during staged construction, a specialized traffic accommodation plan is required.

3. All sign spacing shall be 25m - 100m unless otherwise indicated.

4. A minimum lane width of 3.5m is required.

5. Conflicting lane markings shall be removed.

6. RB-5 and RB-1 signs will be used when a reduced speed zone is required. In this case gazetted speed to be posted after the work area.

RB-5 RB-1

7. If the drop off is greater that 300mm use drawing TCS-B-1.21B (Long Duration)

No.	REVISIONS	BY	DATE
3			
2			
1	Title block and notes updated, note added and flasher eliminated.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

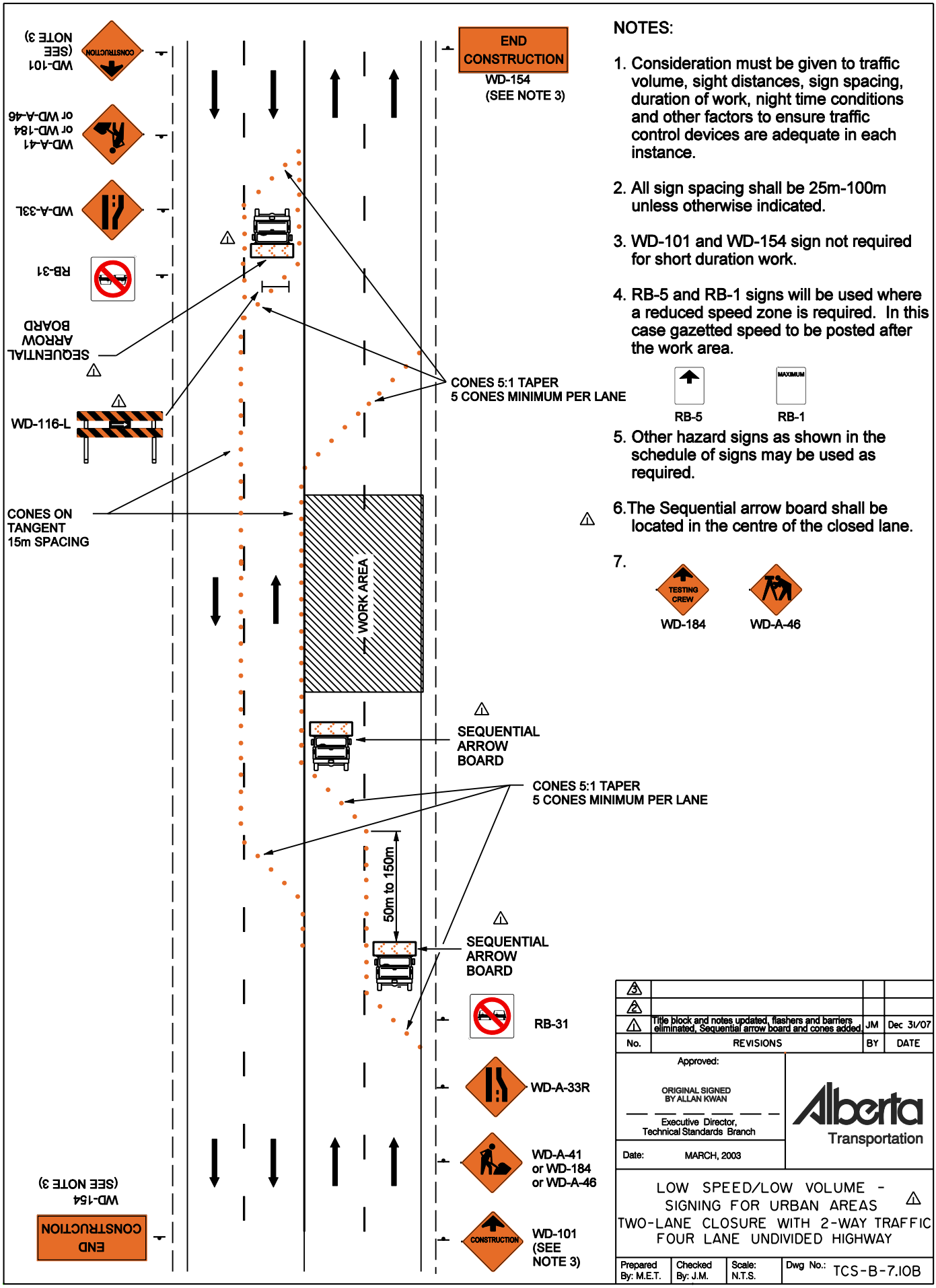
LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS

TYPICAL EXCAVATION SIGNING FOR URBAN AREAS

ONE-LANE CLOSURE

FOUR LANE DIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.9B



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. All sign spacing shall be 25m-100m unless otherwise indicated.
3. WD-101 and WD-154 sign not required for short duration work.
4. RB-5 and RB-1 signs will be used where a reduced speed zone is required. In this case gazetted speed to be posted after the work area.

RB-5 RB-1

5. Other hazard signs as shown in the schedule of signs may be used as required.
6. The Sequential arrow board shall be located in the centre of the closed lane.
7.

WD-184 WD-A-46

No.	REVISIONS	BY	DATE
3			
2			
1	Title block and notes updated, flashers and barriers eliminated, Sequential arrow board and cones added.	JM	Dec 31/07

Approved:

ORIGINAL SIGNED BY ALLAN KWAN

Executive Director, Technical Standards Branch

Date: MARCH, 2003

Alberta Transportation

LOW SPEED/LOW VOLUME - SIGNING FOR URBAN AREAS ⚠
TWO-LANE CLOSURE WITH 2-WAY TRAFFIC
FOUR LANE UNDIVIDED HIGHWAY

Prepared By: M.E.T.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-7.10B

SECTION IV

SAMPLE FORMS

Alberta
TRANSPORTATION

DAILY RECORD OF
TEMPORARY CONSTRUCTION SIGNS

Contract #: _____
Contractor: _____
Highway Location: _____
Type of Work: _____

NOTES:

(1) Signature confirms that the following items have been checked at the time and date indicated:

- All Traffic Control Devices conform to the Traffic Accommodation Strategy and the Contract Specifications
- All Traffic Control Devices are clean, unobstructed and clearly visible
- All Traffic Control Devices are properly located, in good condition and well secured
- All flashers are operating
- Temporary line marking is in place (where applicable)

Month: _____
Year: _____

(2) Designation and Station number of the sign immediately prior to the work area
(3) Station number of the start of the work area
(4) Information is recorded for each work area by the Contractor each day and submitted to the Consultant at the end of each week

Day	Time	(2) Sign		(3) Location of Work Area	Typical Drawing Number	(1) Contractor's Representative	Comments
		Designation	Location				

SECTION V

SIGN SCHEDULE AND SHEETING REQUIREMENTS

SIGN SCHEDULE

	SIGN NO.	MESSAGE OR DESCRIPTION	SIZE (cm x cm)			LETTER HEIGHT AND SERIES NO.	COLOUR	
			RURAL	URBAN			MESSAGE	BACK-GROUND
				High Speed/ High Volume	Low Speed/ Low Volume			
	IB-2	Alberta Route Marker	45 x 60	45 x 60	45 x 60	Pattern Available	Black	White
	IB-8L	Alberta Direction Tab (Left)	45 x 30	45 x 30	45 x 30	Symbol	Black	White
	IB-8R	Alberta Direction Tab (Right)	45 x 30	45 x 30	45 x 30	Symbol	Black	White
	ID-503	Speed Double Fines	60 x 60	60 x 60	60 x 60	Symbol	Black	White
	ID-503A	Double Fines Begins Tab	60 x 30	60 x 30	60 x 30	Symbol	White	Black
	ID-503B	Double Fines Ends Tab	60 x 30	60 x 30	60 x 30	Symbol	White	Black
	IF-205	Exit	145x120x 100	145x120x100	N/A		White	Green
	RA-1	Stop	60 x 60	90 x 90	60 x 60	255 mm "C"	White	Red
	RB-1	Maximum Speed Content Variable	60 x 75	75 x 90	60 x 75	#1 - 100 mm "C", #2 - 300 mm Variable	Black	White
	RB-5	Maximum Speed Ahead Content Variable	60 x 75	75 x 90	60 x 75	#1 - 100 mm "C", #2 - 300 mm Variable	Black	White
	RB-24	Two-Way Traffic	60 x 75	75 x 90	60 x 75	Symbol	Black	White
	RB-31	Do Not Pass	60 x 60	75 x 75	60 x 60	Symbol	Red, Black	White
	WA-9	Chevron Alignment	60 x 75	75 x 90	60 x 75		Black	Yellow
	WA-16L	Merging Traffic (Left)	90x90	90x90	90x90		Black	Yellow
	WA-16R	Merging Traffic (Right)	90x90	90x90	90x90		Black	Yellow

SIGN SCHEDULE

	SIGN NO.	MESSAGE OR DESCRIPTION	SIZE (cm x cm)			LETTER HEIGHT AND SERIES NO.	COLOUR	
			RURAL	URBAN			MESSAGE	BACK-GROUND
				High Speed/ High Volume	Low Speed/ Low Volume			
	WA-31	Divided Highway Begins	90 x 90	90x90	90x90	Symbol	Black	Yellow
	WA-31 T	Divided Highway Begins Tab	60 x 45	60 x 45	60 x 45	150 mm "C"	Black	Yellow
	WA-32	Divided Highway Ends	90 x 90	90 x 90	90 x 90	Symbol	Black	Yellow
	WA-112L	Added Lane (Left)	90 x 90	90 x 90	90 x 90		Black	Yellow
	WA-112R	Added Lane (Right)	90 x 90	90 x 90	90 x 90		Black	Yellow
	WB-1	Stop Ahead	75 x 75	90 x 90	75 x 75	Symbol	Red, Black	Yellow
	WD-101	Construction Ahead	75 x 75 120 x 120	120 x 120	120 x 120	#1 - 150 mm "C", 180 mm "C", #2 - 150 mm "C"	Black	Orange
	WD-101B	Bridge Construction Ahead	120 x 120	120 x 120	120 x 120	#1 - 150 mm "C", 180 mm "C", #2 - 150 mm "C"	Black	Orange
	WD-101C	Utility Construction	90 x 90	120 x 120	90 x 90	#1 - 150 mm "C", 180 mm "C", #2 - 150 mm "C"	Black	Orange
	WD-102	Begin Detour 300 m	90 x 90	120 x 120	90 x 90	#1 & #2 - 150 mm "C", #3 - 125 mm "E"	Black	Orange
	WD-103	Detour Next _ km	120 x 60	120 x 60	120 x 60	150 mm "C"	Black	Orange
	WD-104	Barricade Ahead	90 x 90	120 x 120	90 x 90	#1 - 150 mm "C", #2 - 125 mm "C"	Black	Orange
	WD-106	One Lane Traffic	75 x 75	90 x 90	75 x 75	#1 - 150 mm "C", #2 - 150 mm "C"	Black	Orange
	WD-111	Be Prepared To Stop	75 x 75	90 x 90	75 x 75	#1, #3, #4 - 100 mm "E", 42 - 100 mm "D"	Black	Orange
	WD-116-1L	Barricade (Left)	2.44 x 25	2.44 x 25	2.44 x 25	See Plan TCS-B-4.2	Black	Orange

SIGN SCHEDULE

	SIGN NO.	MESSAGE OR DESCRIPTION	SIZE (cm x cm)			LETTER HEIGHT AND SERIES NO.	COLOUR	
			RURAL	URBAN			MESSAGE	BACK-GROUND
				High Speed/ High Volume	Low Speed/ Low Volume			
	WD-116-1R	Barricade (Right)	2.44 x 25	2.44 x 25	2.44 x 25	See Plan TCS-B-4.2	Black	Orange
	WD-116-2	Road Closed Barricade	2.44 x 25	2.44 x 25	2.44 x 25	See Plan TCS-B-4.2	Black	Orange
	WD-116-3	Bridge Out Barricade	2.44 x 25	2.44 x 25	2.44 x 25	See Plan TCS-B-4.2	Black	Orange
	WD-116-4L	Light Duty (Type 1) Barricade	N/A	N/A	76 x 30		Black	Orange
	WD-116-4R	Light Duty (Type 1) Barricade	N/A	N/A	76 x 30		Black	Orange
	WD-116-5	Barricade Arrow	61.5 x 23	61.5 x 23	61.5 x 23	See Plan TCS-B-4.2	White	Black
	WD- 150	Loose Gravel	75 x 75	90 x 90	75 x 75	#1 - 125 mm "D", #2 - 125 mm "D"	Black	Orange
	WD-154	End Construction	120 x 60	120 x 60	120 x 60	Pattern Available	Black	Orange
	WD-157	Slow Fresh Oil	75 x 75	90 x 90	75 x 75	125 mm "D"	Black	Orange
	WD-158	Testing Crew Next 5 km	90 x 90	120 x 120	90 x 90		Black	Orange
	WD-169	Loose Chips Please Slow Down	120x75	120 x 75	120 x 75	Pattern Available	Black	Orange
	WD-170B	Bridge Construction 3 km	120 x 120	120 x 120	120 x 120	#1 -180 mm "C", #2 -180 mm "E"	Black	Orange
	WD-171	Do Not Pass Follow In Convoy	75 x 90	90 x 120	75 x 90	Pattern Available	Black	Orange
	WD-172	Follow Pilot Vehicle	60 x 75	75 x 90	60 x 75	Pattern Available	Black	Orange
	WD-173	Pilot Vehicle Do Not Pass	165 x 45	165 x 45	165 x 45	Pattern Available	Black	Orange

SIGN SCHEDULE

	SIGN NO.	MESSAGE OR DESCRIPTION	SIZE (cm x cm)			LETTER HEIGHT AND SERIES NO.	COLOUR	
			RURAL	URBAN			MESSAGE	BACK-GROUND
				High Speed/ High Volume	Low Speed/ Low Volume			
	WD-174	Maximum __ Loose Chips	60 x 120	90 x 120	60 x 120	Pattern Available	Black	White, Orange
	WD-175	Smoke Ahead Follow in Convoy	75 x 75	90 x 90	75 x 75		Black	Orange
	WD-179	Traffic Survey Ahead	75 x 75	90 x 90	75 x 75		Black	Orange
	WD-182	New Sign	75 x 75	90 x 90	75 x 75		Red and White	Fluoresc-ent Yellow
	WD-182T	Traffic Control Tab	60 x 30	60 x 30	60 x 30		Black	Yellow
	WD-184	Testing Crew Ahead	90 x 90	90 x 90	90 x 90		Black	Orange
	WD-187	No Centre Line	75 x 75	90 x 90	75 x 75		Black	Orange
	WD-188	Ramp Exit	75 x 75	90 x 90	75 x 75		Black	Orange
	WD-191	Road Grading 3 km	75 x 75	N/A	N/A		Black	Orange
	WD-192	Road Construction Next __ km	120 x 90	120 x 90	120 x 90	Pattern Available, 160mm "C"	Black	Orange
	WD-193	Grading Next 3 km	120 x 120	N/A	N/A	Symbol	Black	Orange
	WD-194	To Oncoming Traffic	N/A	N/A	90 x 75		Black	Orange
	WD-200	Police Emergency Ahead	90 x 90	90 x 90	90 x 90		Black	Pink
	WD-A-1L	Turn (Left)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-1R	Turn (Right)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange

SIGN SCHEDULE

	SIGN NO.	MESSAGE OR DESCRIPTION	SIZE (cm x cm)			LETTER HEIGHT AND SERIES NO.	COLOUR	
			RURAL	URBAN			MESSAGE	BACK-GROUND
				High Speed/ High Volume	Low Speed/ Low Volume			
	WD-A-5L	Reverse Curve (Left)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-5R	Reverse Curve (Right)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-7	Advisory Speed	60 x 60	75 x 75	60 x 60	255 mm "E"	Black	Orange
	WD-A-10	Detour Ahead	75 x 75	90 x 90	75 x 75		Black	Orange
	WD-A-22	Bump	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-23R	Roadway Narrows (Right)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-23L	Roadway Narrows (Left)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-24	Narrow Structure	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-31	Divided Highway Begins	90 x 90	120 x 120	90 x 90	Symbol	Black	Orange
	WD-A-32	Divided Highway Ends	90 x 90	120 x 120	90 x 90	Symbol	Black	Orange
	WD-A-33L	Road Narrows - Left Lane Ends	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-33R	Road Narrows - Right Lane Ends	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-33XL	Road Narrows - Left Lane Ends	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-33XR	Road Narrows - Right Lane Ends	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-41	Road Work	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange

SIGN SCHEDULE

	SIGN NO.	MESSAGE OR DESCRIPTION	SIZE (cm x cm)			LETTER HEIGHT AND SERIES NO.	COLOUR	
			RURAL	URBAN			MESSAGE	BACK-GROUND
				High Speed/ High Volume	Low Speed/ Low Volume			
	WD-A-41-T	Road Work Tab	60 x 45	60 x 45	60 x 45	Symbol	Black	Orange
	WD-A-43L	Roadside Diversion (Left)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-43R	Roadside Diversion (Right)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-44	Detour Tab	45 x 30	45 x 30	45 x 30	150 mm "C"	Black	Orange
	WD-A-45	Flagperson	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-46	Survey Crew Ahead	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-48L	Truck Entrance (Left)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-48R	Truck Entrance (Right)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-49	Pavement Drop-off	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-51L	Roadside Diversion (Left) (Two Lanes)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-51R	Roadside Diversion (Right) (Two Lanes)	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-A-100	Sharp Shoulders	75 x 75	90 x 90	75 x 75	150 mm "C"	Black	Orange
	WD-A-105R	Hazard Marker - Keep Left	30 x 90	30 x 90	30 x 90		Black	Orange
	WD-A-105L	Hazard Marker - Keep Right	30 x 90	30 x 90	30 x 90		Black	Orange
	WD-A-111	Grooved Pavement	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange

SIGN SCHEDULE

	SIGN NO.	MESSAGE OR DESCRIPTION	SIZE (cm x cm)			LETTER HEIGHT AND SERIES NO.	COLOUR	
			RURAL	URBAN			MESSAGE	BACK-GROUND
				High Speed/ High Volume	Low Speed/ Low Volume			
	WD-A-111T	Grooved Pavement Tab	60 x 30	60 x 30	60 x 30	150 mm "C"	Black	Orange
	WD-A-120	Slow Moving Vehicle	51 x51 x51	51 x51 x51	51 x51 x51	Symbol	Orange	Red
	WD-B-3	Two-Way Traffic Ahead	75 x 75	90 x 90	75 x 75	Symbol	Black	Orange
	WD-B-4	Traffic Signals Ahead	90 x 90	90 x 90	90 x 90	Symbol	Red, Yellow, Green, Black	Orange
	WD-B-4T	Structure Width Tab (__ m)	60 x 30	60 x 30	60 x 30		Black	Orange
	WD-T	Distance Tab (__ km)	60 x 30	60 x 30	60 x 30		Black	Orange

SIGN SCHEDULE

NOTES:

1. Sign size, shape, symbol and colour are to be in accordance with the latest edition of the Uniform Traffic Control Devices for Canada Manual and applicable Alberta Transportation (AT) standards. Where there is any discrepancy between the UTCD Manual and the AT standards, the latter shall prevail.

2. For the initial WD-101 sign, 120 x 120 is used on the main alignment and 75 x 75 is used on intersecting roads.

2.0 SIGN SHEETING REQUIREMENTS

The orange portion of all signs, barricades and other Traffic Control Devices shall be fully reflectorized using High Brightness, Retroreflective, Non-Metalized, Prismatic Sheeting Material which incorporates durable, transparent, flourescent pigment and meets the following requirements:

BRIGHTNESS REQUIREMENTS (90° Rotation Angle)		
Observation Angle	Entrance Angle	Orange
0.2	-4	200
0.2	30	92
0.5	-4	80
0.5	30	50

A Minimum Coefficient of Retroreflection (RA) cd/fc/ft^2 (cd . lx^{-1} . m^{-2})

APPENDIX A

TRAFFIC ACCOMMODATION IN WORK ZONES

APPENDIX A		
No.	**Item**	**Description**
1	TAS Component Checklist	Traffic Accommodation Strategy Component Checklist
2	TCS-B- 1.28	Example of Clear Zone Application for Work Area Two Lane Undivided Highway (One Lane Alternating Traffic)
3	TCS-B-1.29	Example of Clear Zone Application for Work Area Four Lane Divided Highway
4	CB6 4.2M16	Precast "F" Shape Temporary Barrier
5	TEB 3.19	Sand Barrel Crash Cushion
6	TCS-B-8.1	Four Lane to Two Lane Emergency Detour
7	TCS-B-8.2	One Lane Closure Double Fine Signage
8	TCS-B-8.3A	Emergency Agency Response One Lane Closure Two Lane Undivided Highway
9	TCS-B-8.3B	Emergency Agency Response One Lane Closure Four Lane Divided Highway
10	Design Bulletin #6/2002	Typical Traffic Controls for Highway Transitions

TRAFFIC ACCOMMODATION STRATEGY
COMPONENT CHECKLIST

	YES	NO	N/A
1. Is the Project Identified? – contract number – highway number – project limits to be shown	☐	☐	☐
2. Is the Project "Scope of Work" Identified?	☐	☐	☐
3. Is the Contractor Identified?	☐	☐	☐
4. Are Sub Contractors Identified? – contact names/phone numbers – assorted tasks	☐	☐	☐
5. Is the Schedule Identified? – date of commencement/completion – milestone dates interim stage of completion	☐	☐	☐
6. Is the Process for Sign Installation/Covering/ Removal Identified? – 2 lane highways – 4 lane highways	☐	☐	☐
7. Will the Project be Pre-Signed? – strategy for covering/monitoring signs	☐	☐	☐
8. Is the Type of Sign Supports Identified? – posts/portables/windmaster/etc.	☐	☐	☐
9. Are the Sign Height Requirements Identified? – long duration signs – short duration signs	☐	☐	☐
10. Are Responsibilities for TCS Identified? – name(s) of on-site designate and contact numbers – monitoring of TCD's during inactive periods	☐	☐	☐
11. Are Day/Night Procedures Established?	☐	☐	☐
12. Is Accommodating Vehicles around Tack Coat & Non-Standard Lane Widths Identified?	☐	☐	☐
13. Are Special User Issues Identified? – over dimensional loads, emergency vehicles, etc.	☐	☐	☐
14. Are Non Typical Conditions Identified? – did contractor address items from S.P.'s?	☐	☐	☐
15. Is Work Staging Identified? – template for each stage – no situations missing	☐	☐	☐

16. Are Detour(s) Identified? ☐ ☐ ☐
- customized drawings

17. Are Drawings Submitted? ☐ ☐ ☐
- all activities

18. Is the Parking of Vehicles/Equipment Been Identified? ☐ ☐ ☐
- during working hours
- during non-working hours

19. Is the Requirements for Flagpersons Been Identified? ☐ ☐ ☐
- certifying agency
- protective clothing
- certificate readily available

20. Is the Procedure for Centreline Spotting Been Identified? ☐ ☐ ☐
- Strategy for the protection of workers

21. Speed Limits Identified? ☐ ☐ ☐
- all activities
- non active periods
- distinct phase breaks

22. Is the Use of Pilot Vehicles Identified? ☐ ☐ ☐

23. Is the Requirement for the Daily Sign Log Been Identified? ☐ ☐ ☐
- include timeline for submission of info to consultant

24. Is the Reporting of Accidents Been Identified? ☐ ☐ ☐

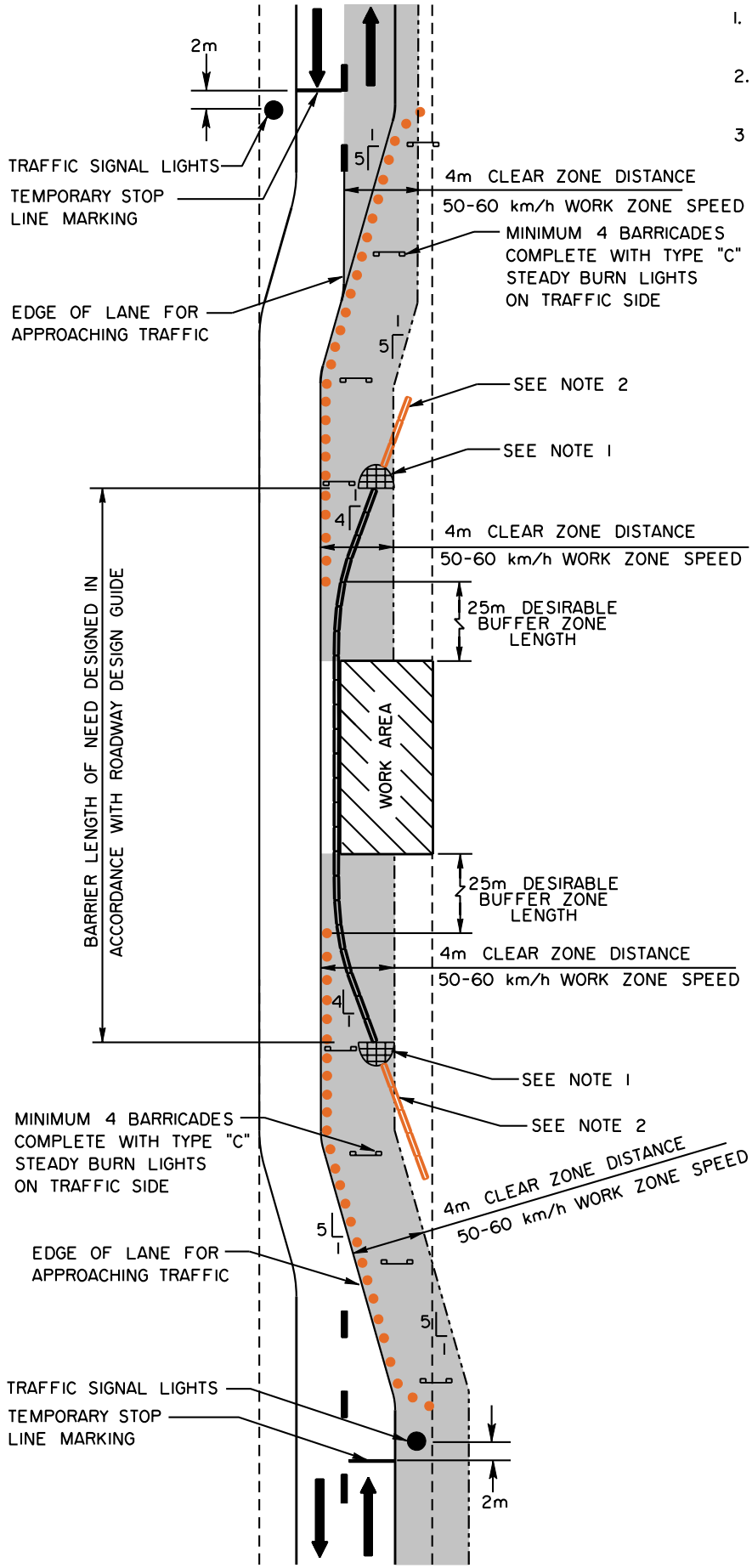
25. Is the Haul Route(s) Identified? ☐ ☐ ☐

26. Is the Process For Truck Turning Movements Within the Work Area/Zone Identified? ☐ ☐ ☐

27. Emergency Response Strategy? ☐ ☐ ☐
- names/contact numbers
- arrangement with emergency responders

NOTES

Strategy must conform to the Traffic Accommodation In Work Zones Manual (current edition)
Not an all-inclusive list. Additional information may have to be considered and provided on a project by project basis.



NOTES

1. PROVIDE CRASH CUSHION IF BARRIER TERMINATES WITHIN CLEAR ZONE.
2. NO CRASH CUSHION REQUIRED IF BARRIER EXTENDED OUTSIDE CLEAR ZONE.
3. SEE SECTION 12.1.1 "APPLICATION OF THE CLEAR ZONE CONCEPT IN WOK ZONES" OF SECTION 1 FOR ADDITIONAL INFORMATION.

No.	REVISIONS	BY	DATE
2			
1			

Approved:
Original signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: OCTOBER, 2008

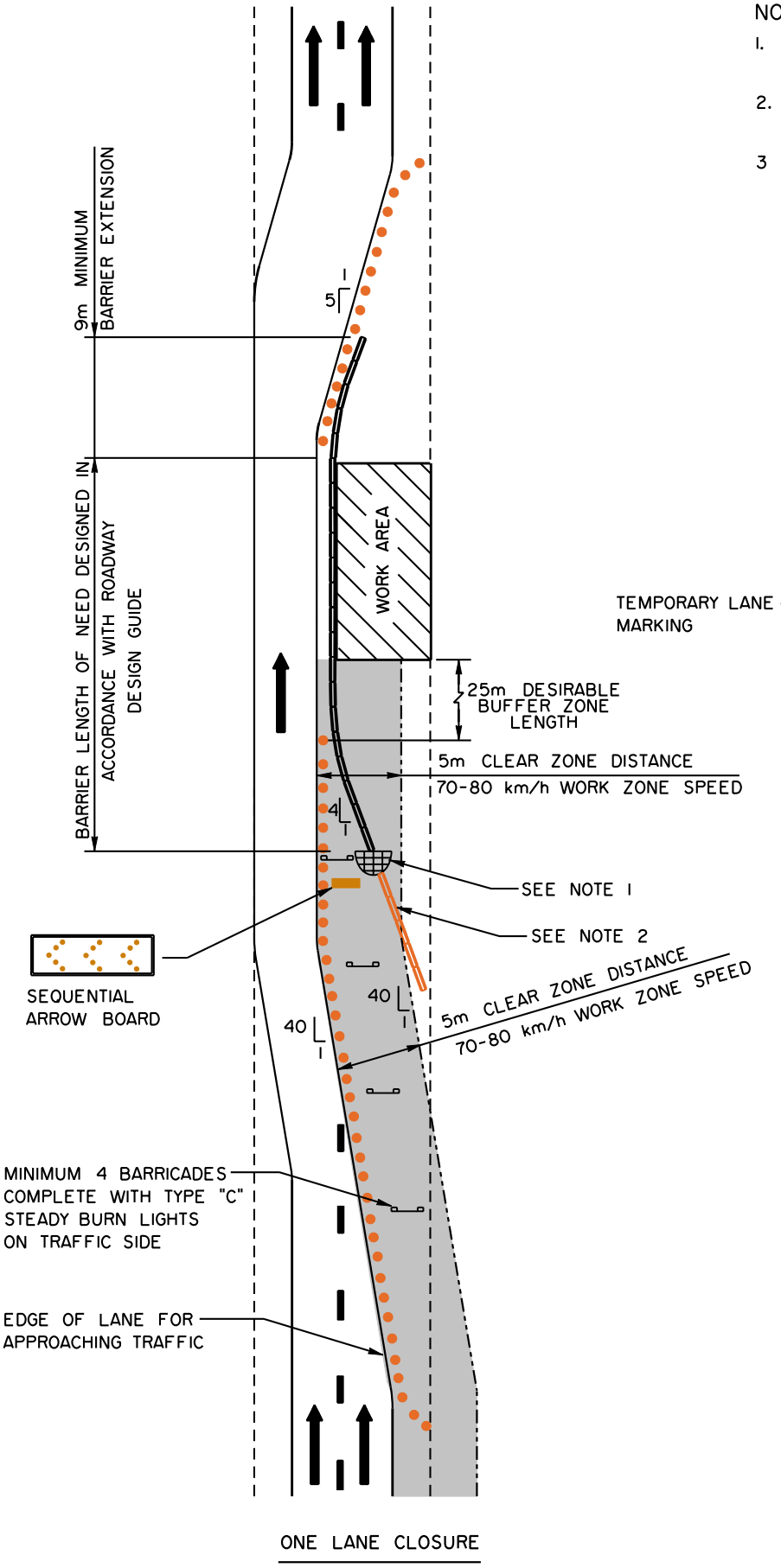
Alberta Transportation

EXAMPLE OF CLEAR ZONE APPLICATION FOR WORK AREA TWO LANE UNDIVIDED HIGHWAY (ONE LANE ALTERNATING TRAFFIC)

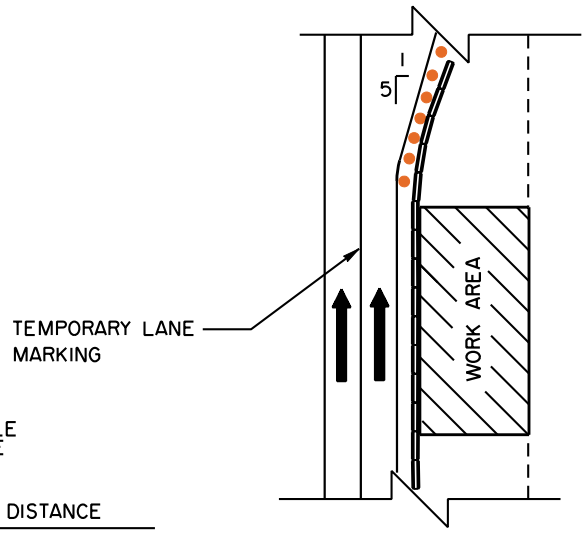
Prepared By: G.E.C.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.28 LONG DURATION

NOTES

1. PROVIDE CRASH CUSHION IF BARRIER TERMINATES WITHIN CLEAR ZONE.
2. NO CRASH CUSHION REQUIRED IF BARRIER EXTENDED OUTSIDE CLEAR ZONE.
3 SEE SECTION 12.1.1 "APPLICATION OF THE CLEAR ZONE CONCEPT IN WOK ZONES" OF SECTION 1 FOR ADDITIONAL INFORMATION.



ONE LANE CLOSURE



TWO LANE TRAFFIC
(REDUCED BRIDGE WIDTH)

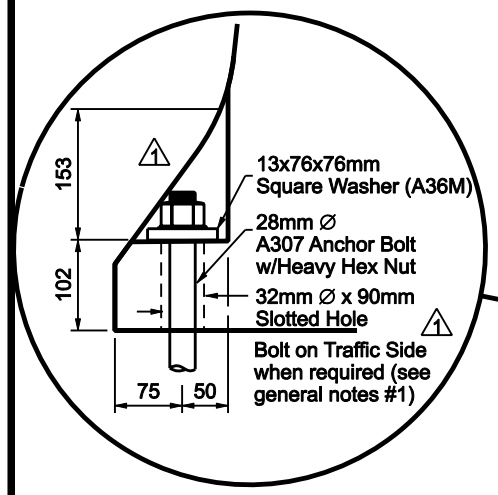
No.	REVISIONS	BY	DATE
2			
1			

Approved:
Original signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: OCTOBER, 2008

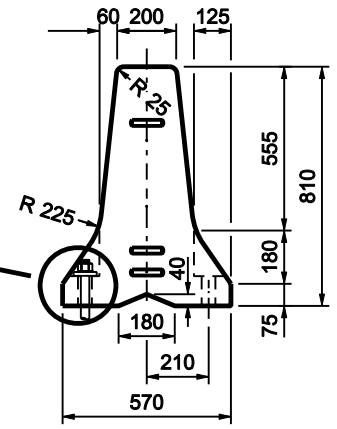
Alberta Transportation

EXAMPLE OF
CLEAR ZONE APPLICATION FOR WORK AREA
FOUR LANE DIVIDED HIGHWAY

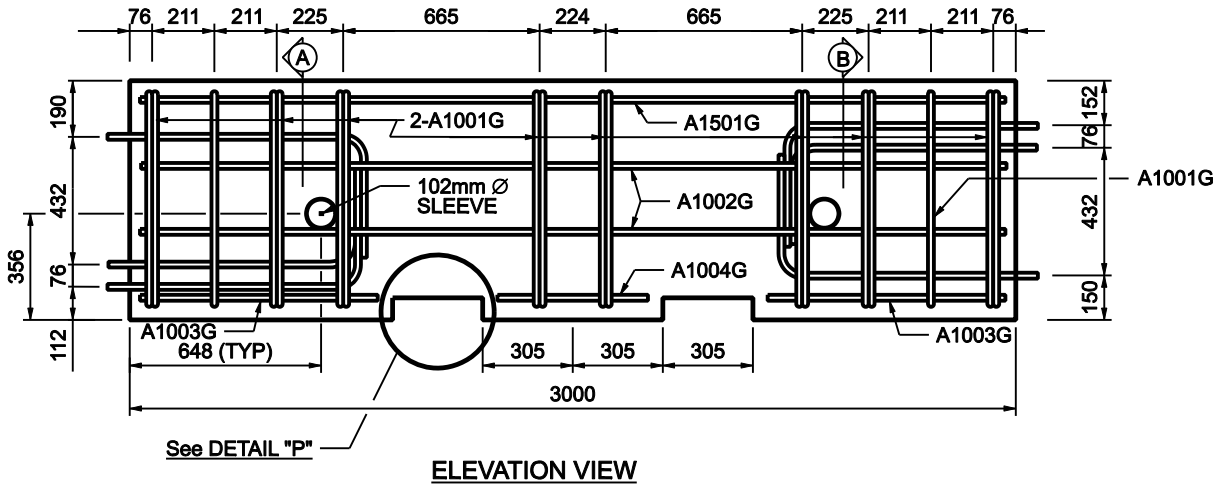
Prepared By: G.E.C.	Checked By: J.T.	Scale: N.T.S.	Dwg No.: TCS-B-1.29 LONG DURATION



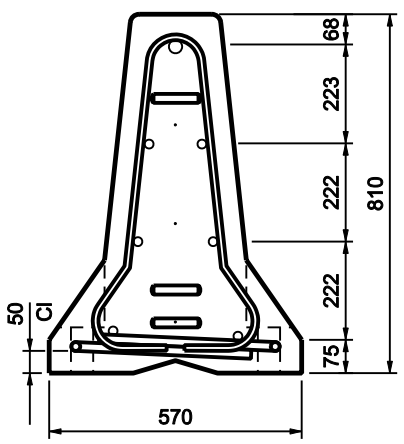
OPTIONAL ANCHOR BOLTS 1
(Traffic Side Only)



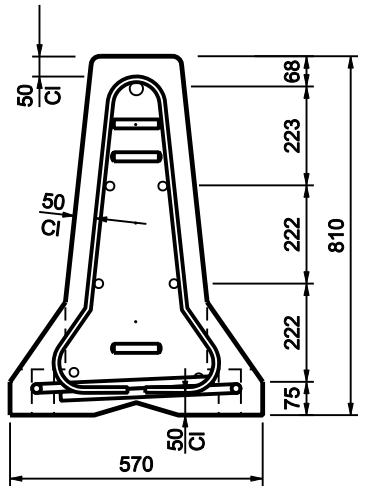
END VIEW



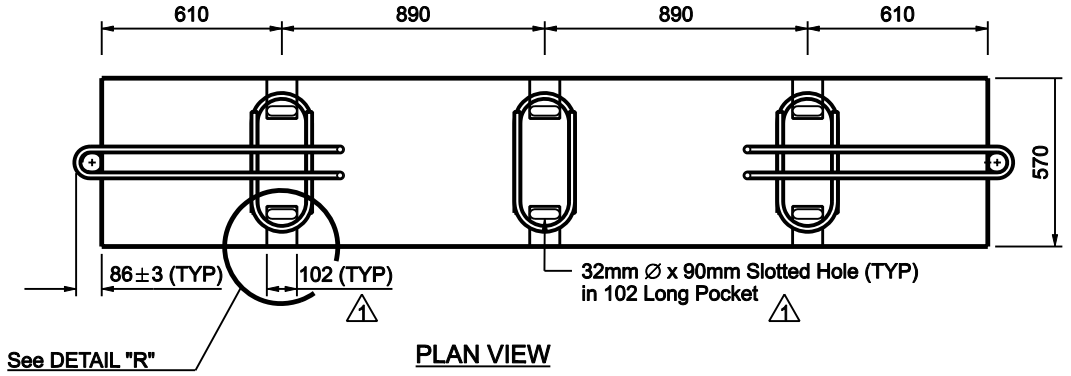
ELEVATION VIEW



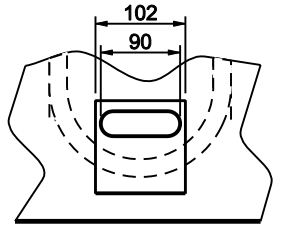
A SECTION



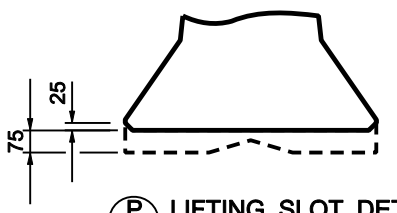
B SECTION



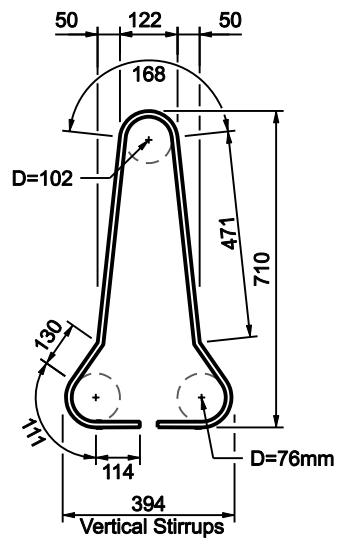
PLAN VIEW
NOTE: Remaining rebars are omitted for clarity



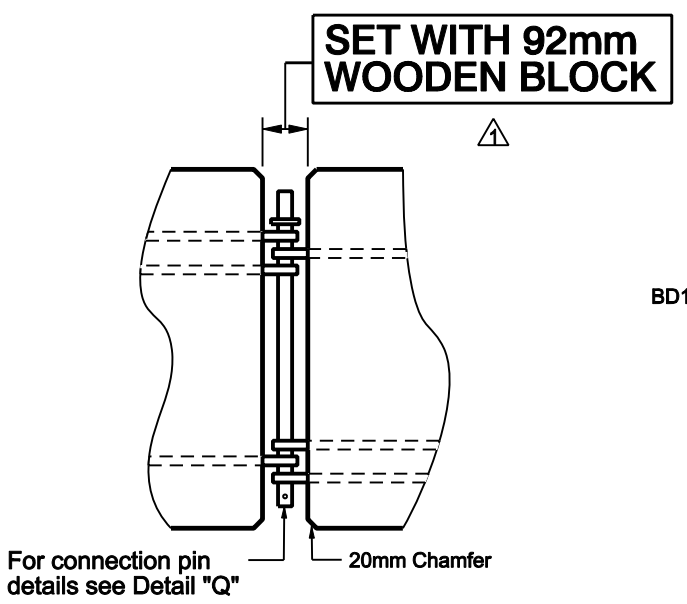
R SLOTTED HOLE DETAIL 1



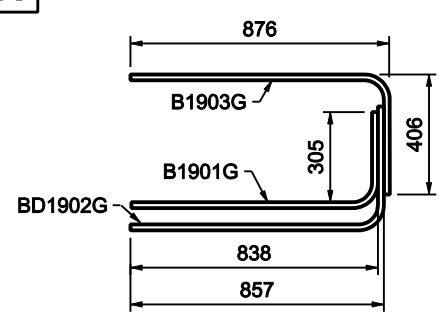
P LIFTING SLOT DETAIL
(25mm Chamfer to prevent spalling)



A1001G



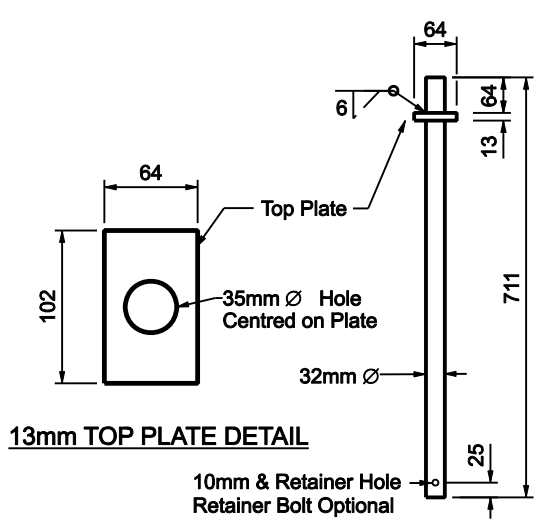
DETAILS OF BARRIER CONNECTION



ELEVATION

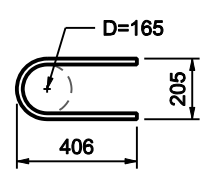
PLAN

LOOP BAR ASSEMBLY
Material as stated in General Notes



13mm TOP PLATE DETAIL

Q CONNECTION PIN DETAIL



A2001G

General Notes:

1. The barrier is based on a design that has been crash tested and meets the requirements of NCHRP Test Level 3. The following deflecton information is provided for guidance on the use of this barrier:

2000 kg pick-up truck test @ 100kph @ 25°	Approx deflection
Unanchored	1800 mm
Four 25 mm diameter by 1m long steel dowels per segment driven through holes provided	75 mm
Three 19 diameter anchor bolts c/w drop-in anchors in concrete slab on traffic side	900 mm (anchor failure is expected)
Three 28 diameter A307 fully developed tension anchor bolts on traffic side	300 mm (deflection on top edge only)

1

When using this barrier, it is the responsibility of the user to ensure appropriate deflection room or anchoring commensurate with the risks based on traffic and site conditions.

Materials:

1. Reinforcing bars – Grade 400W.
2. 19 mm diameter loop bars – Minimum yield 420 MPa, minimum tensile strength 550 MPa, minimum 14% elongation in 203 mm, pass a 180 degree bend test using a 3.5D bend diameter.
3. 32 mm diameter pin – ASTM A36.
4. All reinforcing bars and steel hardware to be hot-dip galvanized after fabrication to the requirements of CSA G164.
5. Concrete strength shall be 40 MPa @ 28 days, and all requirements of Section 7 -Precast Concrete Units of the Specifications for Bridge Construction shall be met.

Handling and installation:

1. At no time shall the barriers be lifted, moved, etc. by the use of the loop bars at the ends.
2. For barriers placed on a paved surface, all loose dirt and sand shall be removed from the roadway just prior to placement of the barriers. Barriers can also be placed on a compacted base material with a minimum thickness of 150 mm and a minimum width of 1.2 m.
3. Calculated mass of one segment = 1.8 tonnes

BAR LIST : 3000 SEGMENT

Mark	Size	Shape	No.	Length	Mass
A1001G	10		18	1820	26.0
A2001G	20		6	898	13.0
A1501G	15		1	2900	5.0
A1002G	10		4	2900	9.1
A1003G	10		4	790	2.0
A1004G	10		2	510	1.0

TOTAL Kg 55.0

No.	REVISIONS	BY	DATE
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1	Notes and Details	BK	Sept/06

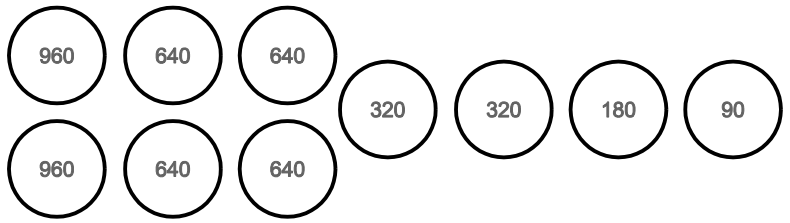
Approved:
Original signed by
Allan Kwan
Executive Director,
Technical Standards Branch

Date: NOVEMBER 23, 2004

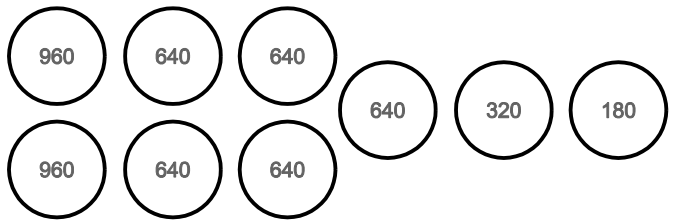
Alberta
INFRASTRUCTURE AND TRANSPORTATION

PRECAST 'F' SHAPE BARRIER
NCHRP 350 TEST LEVEL 3

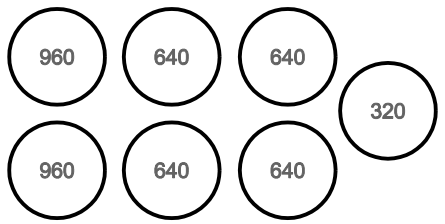
Prepared By: M.T	Checked By: R.Y	Scale: N.T.S.	Dwg No.: CB6 4.2 M 16



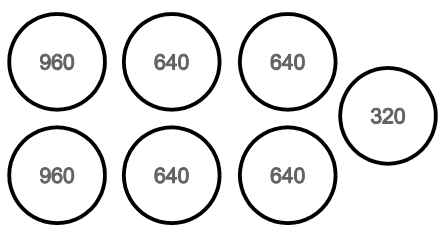
BARREL ARRAY - 80km/h



BARREL ARRAY - 70km/h

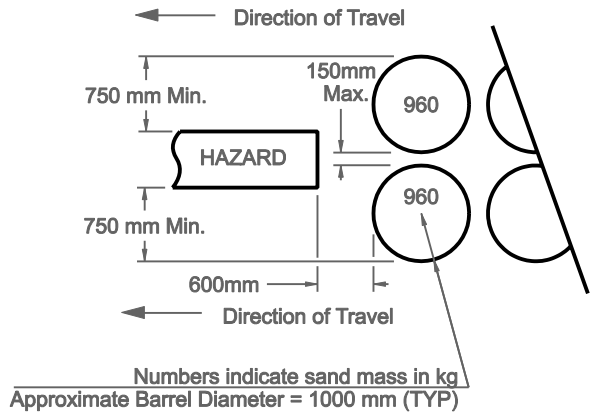


BARREL ARRAY - 60km/h

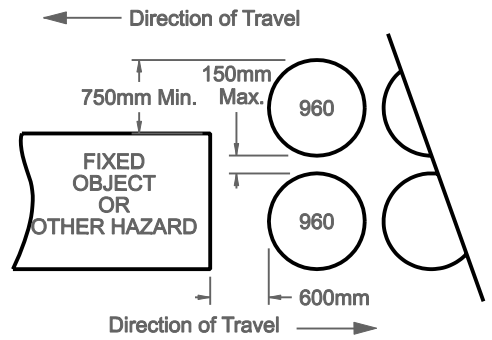


BARREL ARRAY - 50km/h

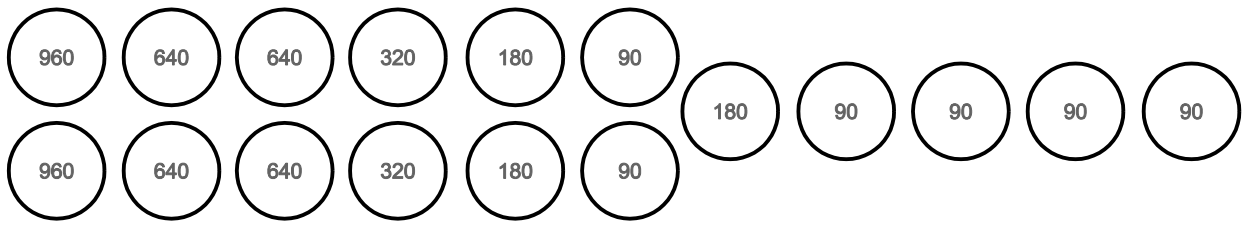
BARREL ARRAY - 40km/h



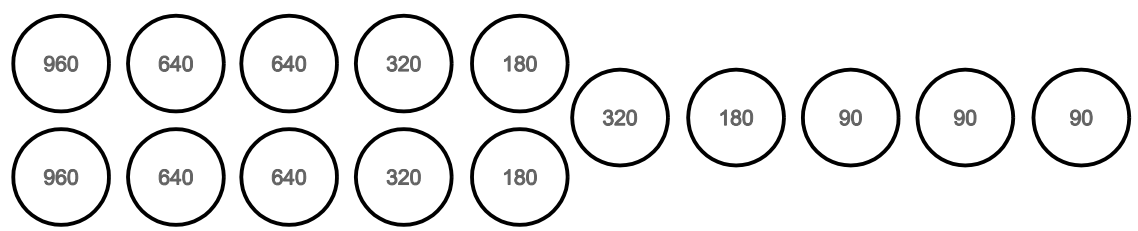
ONE DIRECTION TRAFFIC



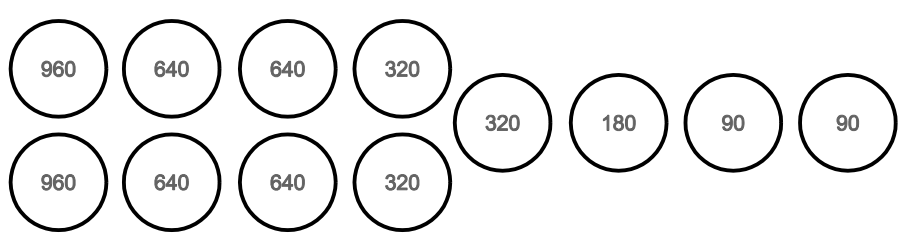
TWO DIRECTION TRAFFIC



BARREL ARRAY - 110km/h



BARREL ARRAY - 100km/h



BARREL ARRAY - 90km/h

General notes:

1. Only crash tested components meeting NCHRP 350 requirements shall be used. The systems currently available are:
   a. Energite Inertia Barrier System by Quixote Transportation Safety Inc.
   b. Fitch Sand Barrel System by Quixote Transportation Safety Inc.
   c. TrafFix Impact Attenuator Sand Barrels by TrafFix Devices Inc.
2. The sand mass shall be clearly marked on each barrel.
3. For permanent installations, the Fitch System shall be used.
4. The systems shall be installed strictly in accordance with manufacturer's recommendations.
5. The sand barrel systems are non-directive and break up during impact. The vehicle speed is slowed by transfer of it's momentum to the sand, allowing for safe, steady deceleration. Sand and plastic parts from the system will scatter in the direction of impact.
6. Fill sand shall conform to ASTM C-33 – washed concrete sand or approved equal. Moisture content of sand shall be three percent or less to minimize caking. The sand shall be mixed with an appropriate percentage of rock salt when use during freezing temperature is expected.
7. Barrels shall be set as far from the traveled way as possible to minimize the number of brush or nuisance hits.
8. Barrel layout shall conform with the configuration for the appropriate posted highway speed.
9. In the case of work zone installations, the design speed shall be at least equal to the speed posted through the work zone.

No.	REVISIONS	BY	DATE
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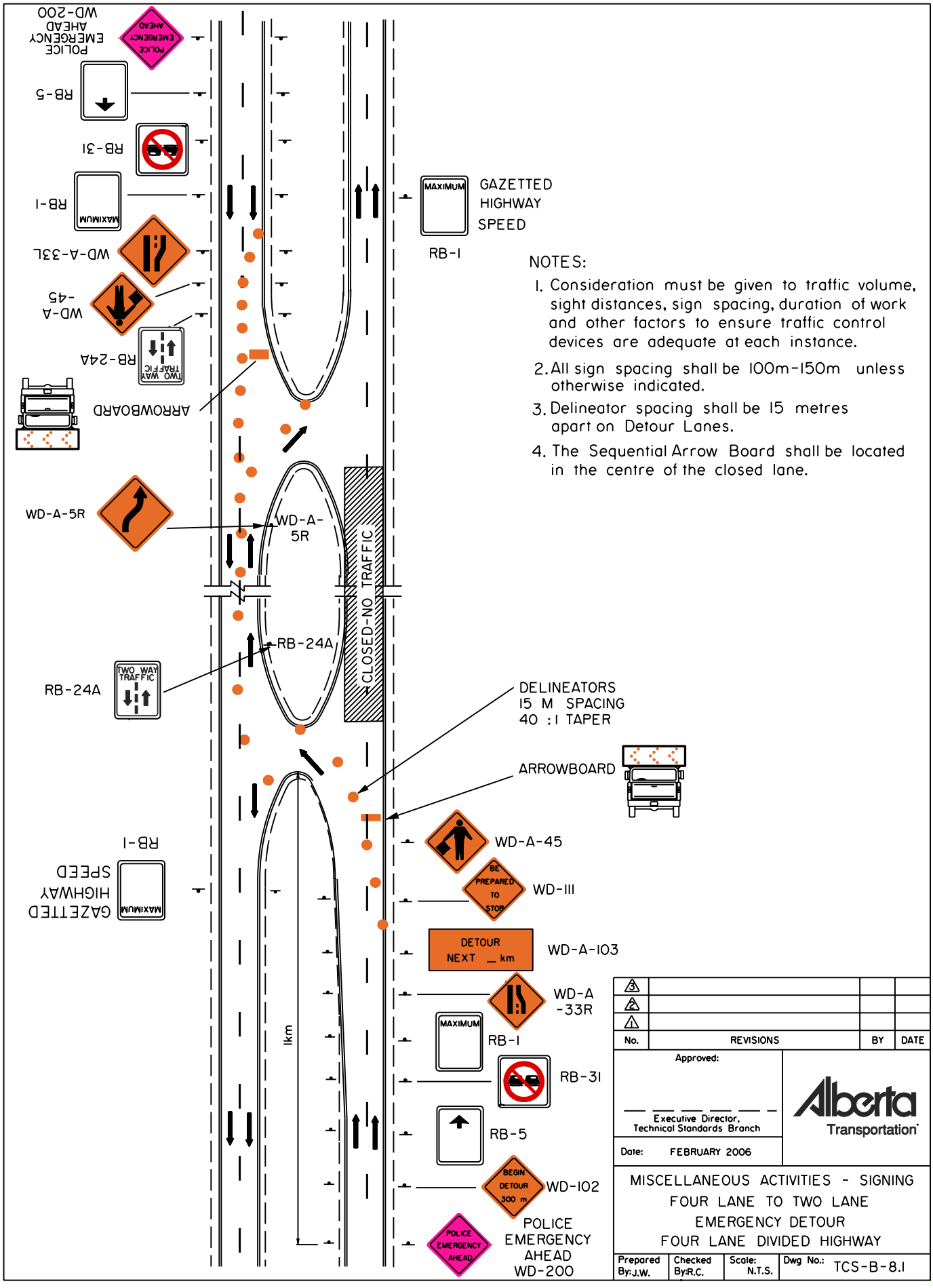
Approved:
Original signed by
Allan Kwan
Executive Director,
Technical Standards Branch

Date: NOVEMBER 23, 2004

Alberta
INFRASTRUCTURE AND TRANSPORTATION

SAND BARREL CUSHION SYSTEM

Prepared By: M.T.	Checked By: R.Y.	Scale: N.T.S.	Dwg No.: TEB 3.19



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are adequate at each instance.
2. All sign spacing shall be 100m-150m unless otherwise indicated.
3. Delineator spacing shall be 15 metres apart on Detour Lanes.
4. The Sequential Arrow Board shall be located in the centre of the closed lane.

No.	REVISIONS	BY	DATE
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Approved:

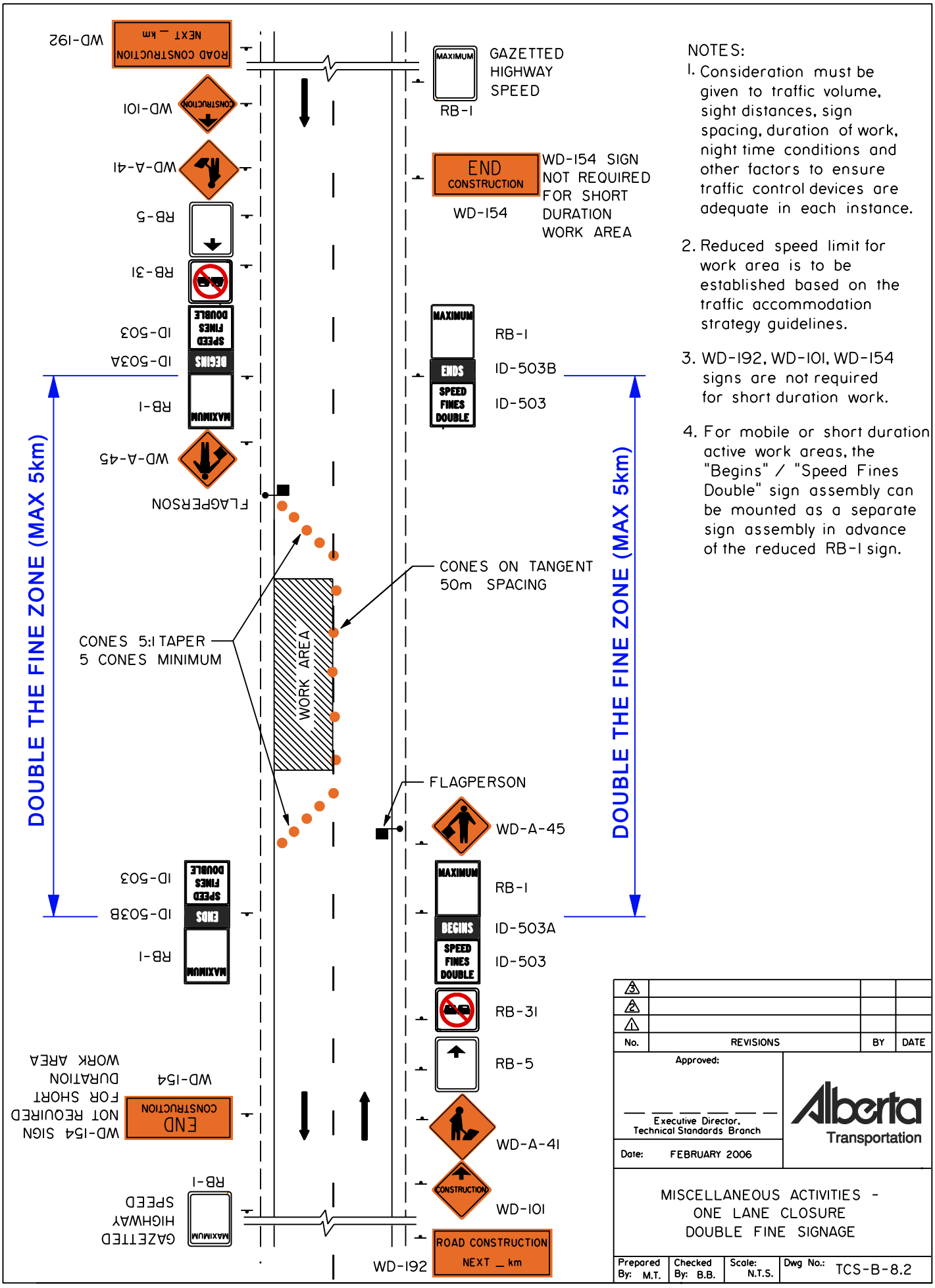
Executive Director,
Technical Standards Branch

Date: FEBRUARY 2006

Alberta Transportation

MISCELLANEOUS ACTIVITIES - SIGNING
FOUR LANE TO TWO LANE
EMERGENCY DETOUR
FOUR LANE DIVIDED HIGHWAY

Prepared By: J.W.	Checked By: R.C.	Scale: N.T.S.	Dwg No.: TCS-B-8.1



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work, night time conditions and other factors to ensure traffic control devices are adequate in each instance.
2. Reduced speed limit for work area is to be established based on the traffic accommodation strategy guidelines.
3. WD-192, WD-101, WD-154 signs are not required for short duration work.
4. For mobile or short duration active work areas, the "Begins" / "Speed Fines Double" sign assembly can be mounted as a separate sign assembly in advance of the reduced RB-1 sign.

No.	REVISIONS	BY	DATE
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Approved:

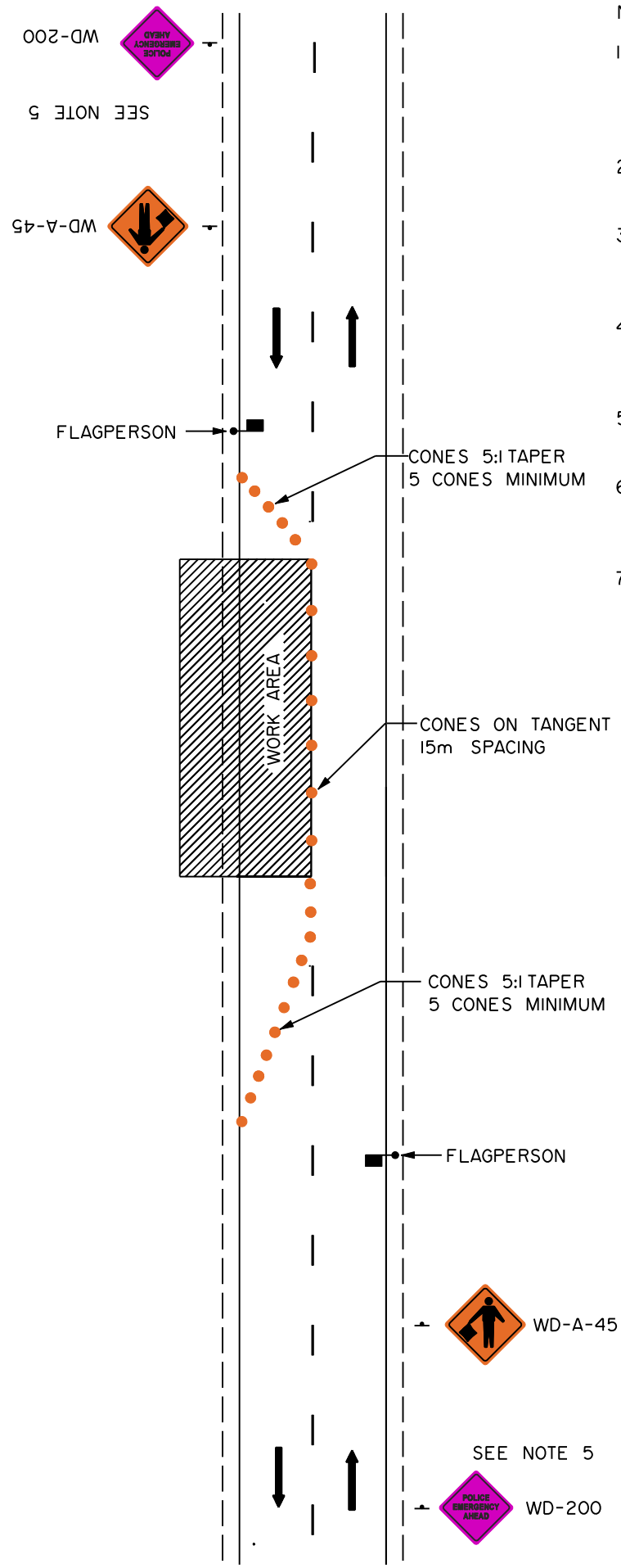
Executive Director,
Technical Standards Branch

Date: FEBRUARY 2006

Alberta Transportation

MISCELLANEOUS ACTIVITIES - ONE LANE CLOSURE DOUBLE FINE SIGNAGE

Prepared By: M.T.	Checked By: B.B.	Scale: N.T.S.	Dwg No.: TCS-B-8.2



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are aequate in each instance.
2. All sign spacing shall be 100m-150m unless there are sight restrictions.
3. For very short assistance, tire replacement, delivery of fuel, etc. signs may not be required if the vehicle does not encroach the driving lane.
4. If the vehicle is parked on the shoulder, not impeding the traffic lane, traffic cones should be placed around the vehicle.
5. For load transfer or retrieval, short duration Drawing No. TCS-B-2.1A must be used.
6. If there is no lane closure, the signage as shown on this drawing will not apply. Other hazard signs may be used as required.
7. Examples of other Warning signs that may be used:

FIRE EMERGENCY AHEAD

VEHICLE RETRIEVAL AHEAD

TOW TRUCK AHEAD

No.	REVISIONS	BY	DATE
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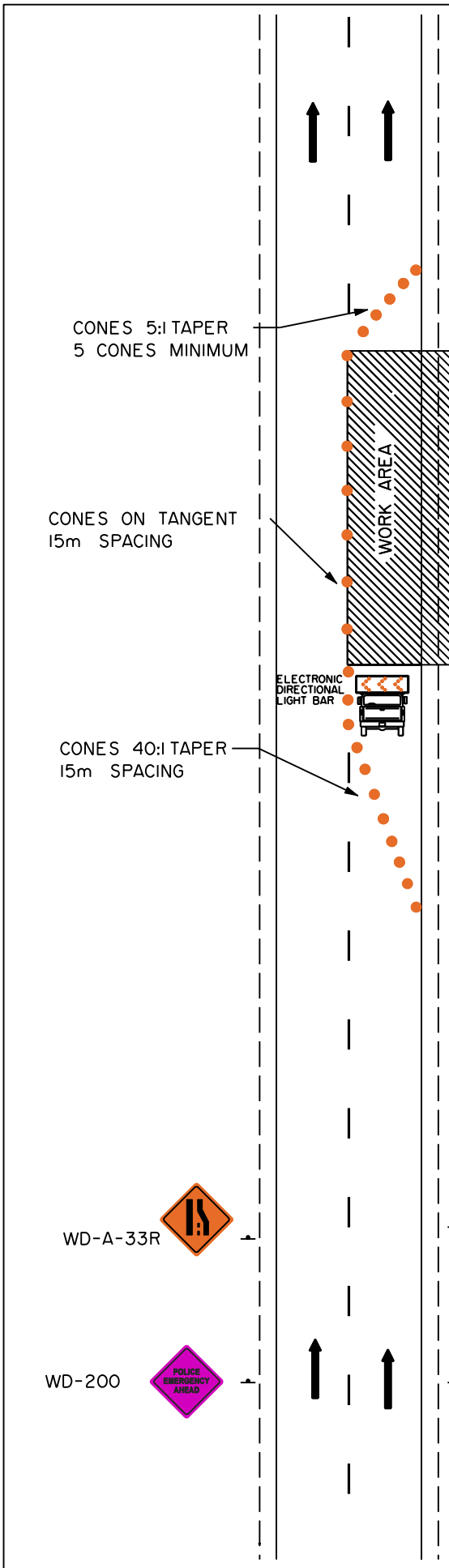
Approved:
Original signed by
Allan Kwan
Executive Director
Technical Standards Branch
Date: OCTOBER, 2008

Alberta Transportation

EMERGENCY AGENCY RESPONSE
ONE LANE CLOSURE
TWO LANE UNDIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-8.3A



NOTES:

1. Consideration must be given to traffic volume, sight distances, sign spacing, duration of work and other factors to ensure traffic control devices are aequate in each instance.
2. All sign spacing shall be 100m-150m unless there are sight restrictions.
3. For very short assistance, tire replacement, delivery of fuel, etc. signs may not be required if the vehicle does not encroach the driving lane.
4. If the vehicle is parked on the shoulder, not impeding the traffic lane, traffic cones should be placed around the vehicle.
5. For load transfer or retrieval, short duration Drawing No. TCS-B-2.1B must be used.
6. If there is no lane closure, the signage as shown on this drawing will not apply. Other hazard signs may be used as required.
7. Examples of other Warning signs that may be used:

FIRE EMERGENCY AHEAD

WD-A-33L

TOW TRUCK AHEAD

VEHICLE RETRIEVAL AHEAD

No.	REVISIONS	BY	DATE
3			
2			
1			

Approved:
Original signed by
Allan Kwan
Executive Director,
Technical Standards Branch
Date: OCTOBER, 2008

Alberta Transportation

EMERGENCY AGENCY RESPONSE
ONE LANE CLOSURE
FOUR LANE DIVIDED HIGHWAY

Prepared By: G.E.C.	Checked By: J.M.	Scale: N.T.S.	Dwg No.: TCS-B-8.3B

DESIGN BULLETIN #6/2002

Typical Traffic Controls for Highway Transitions Two-Lane Undivided – Four-Lane Divided.

Summary: This technical bulletin is issued to notify designers of revisions to the standard signing diagrams for the above and to provide a guideline on the usage of beacons at transitions.

The department desires to provide a high degree of consistency in the use of traffic control devices on the highway system. This is especially important on long continuous highways where road users are likely to encounter the same types of transitions several times. Highway 43 from the Yellowhead Highway to the British Columbia border is an example of an on-going twinning program where traffic may be transitioned from two lane to four lane and vice-versa several times along it's length.

To maintain consistency designers are to use the following new standard for all transitions other than "temporary" work zone transitions.

Drawing # TEB 1.49 - Typical Signing for Divided Highway Transitions

The drawing includes two geometrically different scenarios for a divided highway transition: Case A and Case B. It replaces former TEB 1.49 and TEB 1.50 drawings. The TEB 1.50 number has been reserved for future signing plans.

Designers should note the following:

1. New traffic control standards are introduced to mark divided highway transitions and they include:
   - Standardization of pavement markings for merge area to reflect TAC's new standard for lane end markings;
   - Opposite traffic control signing package "Do Not Enter" and "Wrong Way" is introduced at the diverge point for each transition scenario.
   - For a divided highway transition called Case A traffic flow is improved with a set of Chevron signs installed within the painted gore area. The "Keep Right" assembly is installed in the painted gore area in the front of the chevron signs set.
   - The Keep Right Assembly is improved with the use of oversize signs: "Two-Way Traffic Ahead" sign (75 x 75) and a "Keep Right" sign (150 x 120);
2. "Temporary" transitions are generally defined as transitions that will be in use for one construction season only and will be contained inside a construction zone with appropriate posted speed.
3. Traffic control at "temporary" transitions shall be undertaken as per the "Traffic

Accommodation in Work Zones" manual (revised in May 2001).

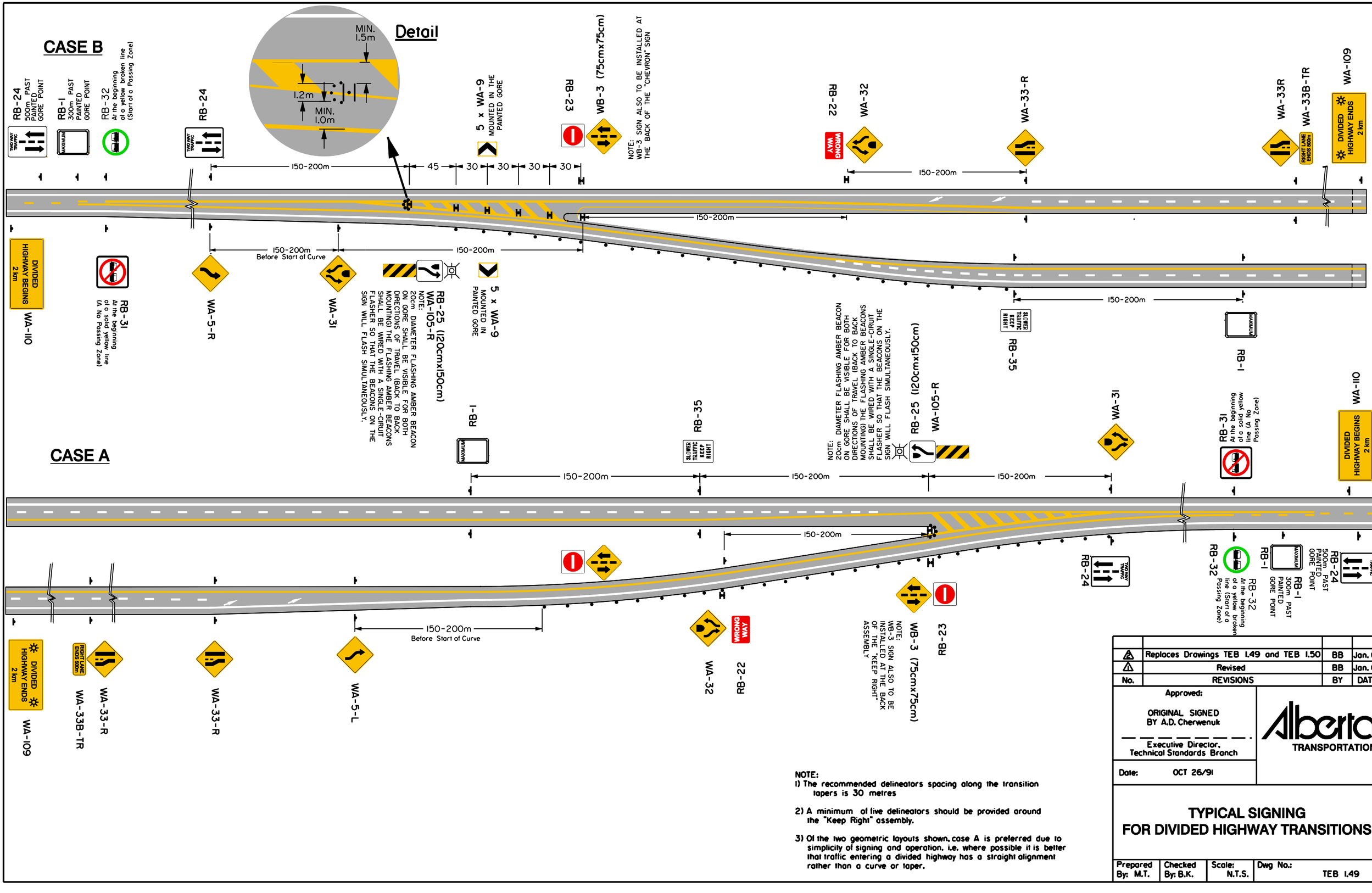
4. A flashing light (visible from both directions of travel) is required at the gore area of all non-temporary undivided highway to divided highway transitions. On non-temporary transitions from divided highway to undivided highway the WA-109 standard sign is required. This includes two alternating flashing beacons. The technical details of the flashing lights are specified in the current edition of the Uniform Traffic Control Devices for Canada manual.

Date of Issue: 2 May 2002
Effective date: 2 May 2002
Contact: Richard Chow/Bill Kenny, Technical Standards Branch, Alberta Transportation.

Attachments: Drawings TEB 1.49.

teb1m049.pdf

CASE B



NOTE:
1) The recommended delineators spacing along the transition tapers is 30 metres

2) A minimum of five delineators should be provided around the "Keep Right" assembly.

3) Of the two geometric layouts shown, case A is preferred due to simplicity of signing and operation. i.e. where possible it is better that traffic entering a divided highway has a straight alignment rather than a curve or taper.

No.	REVISIONS	BY	DATE
2	Replaces Drawings TEB 1.49 and TEB 1.50	BB	Jan. 02
1	Revised	BB	Jan. 02

Approved:

ORIGINAL SIGNED BY A.D. Cherwenuk

Executive Director, Technical Standards Branch

Date: OCT 26/91

Alberta TRANSPORTATION

TYPICAL SIGNING FOR DIVIDED HIGHWAY TRANSITIONS

Prepared By: M.T.	Checked By: B.K.	Scale: N.T.S.	Dwg No.: TEB 1.49