UTILITY POLICY MANUAL

BRITISH COLUMBIA

Ministry of Transportation and Infrastructure

2019
Version 1.0

1. Introduction to the Utility Policy Manual 1

1.1 About this Manual 1

1.1.1 General Context 1

1.1.2 Purpose and Scope of this Manual 1

1.1.3 Manual Administration 2

1.2 General Information about Utilities Covered in this Manual 2

1.2.1 Utilities Definitions 2

1.2.2 Public Utilities 2

1.2.3 Private Utilities 3

1.3 Source Materials 3

1.3.1 References to Source Materials 3

1.4 Ministry Organization and Structure 3

1.4.1 Departmental Overview 3

1.4.2 Highway Regions 4

1.4.3 Highway Districts 6

1.4.4 Service Areas 8

2. Utilities Accommodation 10

2.1 General Policies of Utilities Accommodation 10

2.1.1 Benefits of Accommodating Utilities within Highway Right-of-Way 10

2.1.2 Paramountcy of Safety, Highway Operations, and Future Highway Development 10

2.1.3 Utilities Use Highway Right-of Way at Their Own Risk 10

2.1.4 Utility Infrastructure Must be Authorized 11

2.2 Powers of the Minister of Transportation and Infrastructure 11

2.2.1 Power to Issue Authorizations 11

2.2.2 Employees with the Minister's Delegated Authority 11

2.3 Regulated Utilities 11

2.3.1 General Overview 11

2.3.2 Provincially Regulated Electric Utilities 12

2.3.3 Provincially Regulated Gas Utilities (less than 700 kPa pressure) 13

2.3.4 Provincially Regulated Oil and Gas Pipelines (greater than 700 kPa pressure) 13

2.3.5 Federally Regulated Oil and Gas Pipelines 13

2.3.6 Federally Regulated Telecommunications Facilities (Wireline) 13

2.3.7 Wireless Communication Sites 14

2.4 Approvals from other Agencies 14

2.4.1 Utility Organizations are Responsible for Obtaining Additional Approvals 14

2.5 Utility Policies by Class of Highway 14

2.5.1 Utilities are Permitted on Most Classes of Highway 14

2.5.2 Utilities Prohibited Within and Parallel to Certain Rights-of-Way 14

2.5.3 Most Utilities Can Cross All Classes of Highway 15

2.5.4 Utilities May Not be Permitted to Use Certain Right-of-Way 15

2.6 Utility Coordination 15
2.6.1 Coordination Between the Ministry and Utility Organizations 15
2.6.2 Coordination Between Utility Organizations 16
2.6.3 Single Pole Line Policy 16
2.7 Risk and Risk Management 16
2.7.1 Risk Overview 16
2.7.2 Risk Management 16
2.7.3 Site Inspection/Quality Audit and Monitoring 18

3. Utility-Initiated Works (Permits) 19
3.1 General Information about Authorizations 19
3.1.1 Authorizations are Required for all Utility Installations 19
3.1.2 Power to Authorize Utilities 19
3.1.3 Power to Give Notice for Unauthorized Use 20
3.1.4 Power to Amend and Terminate Authorizations 20
3.1.5 Permit Expiration 20
3.1.6 Jurisdiction 20
3.2 When New or Amended Permits Are Required 20
3.2.1 When New Permits Are Required 20
3.2.2 When Amended Permits are Required 21
3.2.3 When New or Amended Permits Are Not Required 21
3.2.4 Where New or Amended Permits Cannot Be Issued 22
3.3 Permit Issuance 22
3.3.1 Permits Are Not Issued to a Utility Organization's Contractor 22
3.3.2 Permits are Issued to One Utility Organization Only 22
3.3.3 The Permitted Utility Organization is Responsible for all Third Parties 22
3.4 Types of Ministry Authorizations 23
3.4.1 Site Permits 23
3.4.2 Major Utility Project Permits 23
3.4.3 "Blanket Permits" 23
3.4.4 Authorizations under a Master Use Agreement 25
3.4.5 Other forms of Authorizations 25
3.5 Applying for Permits 25

4. Properties and Land Management 26
4.1 Properties and Land Management 26
4.1.1 Interest in Highway Right-of-Way Lands 26
4.1.2 Highway Right-of-Way Acquisition for Ministry Projects 26
4.1.3 Utilities Impacted by the Disposal of Highway Right-of-Way 26
4.1.4 Utility Use and Occupation of BCTFA Lands 27
4.1.5 Utilities on Roads that have not been Established as Highway Right-of-Way 27
4.1.6 Extinguishment of Easements and Statutory Rights-of-Way 27

5. First Nations Consultation 28

5.1 Consultation Overview 28

5.1.1 Provincial Duty to Consult 28

5.1.2 Consultation in Practice 28

5.2 General Overview of Consultation Process for Permits 28

5.2.1 District Decides Who Will Perform Consultation 28

5.2.2 District Performs Consultation Itself 29

5.2.3 District Assigns Consultation to the Applicant 29

5.2.4 If the Utility Organization has Already Performed Consultation 29

5.3 Consultation Process for Ministry Projects 30

6. Environmental Management 31

6.1 Approvals and Construction Environmental Management Plans 31

6.2 Vegetation Management 32

6.2.1 Invasive Plant Management 32

6.2.2 Herbicide Use Restriction 32

6.2.3 Harvesting of Crown Timber on Highway Right-of-Way 32

6.3 Highway Right-of-Way Preservation 33

6.3.1 Erosion and Drainage Control 33

6.3.2 Wildlife Exclusion Systems 33

6.4 Contaminated Environmental Media 33

7. Traffic Management and Work Notification 35

7.1 Traffic Management and Control 35

7.2 Work Notification and Lane Closures 35

7.3 Traffic Control During an Emergency 35

8. Highway Accesses 36

8.1 Highway Accesses and Permits 36

9. Utility Locates 37

9.1 Utility Locates 37

10. Prime Contractor 38

10.1 Prime Contractor 38

10.1.1 Utility Organization as the Prime Contractor during Utility-initiated Work 38

10.1.2 Ministry-Initiated Projects and Prime Contractors 38

11. Engineer of Record 39

11.1 Engineer of Record Requirements 39

12. Record Drawings 40

12.1 Record Drawings 40

13. Intentionally Left Blank 41

14. Ministry-Initiated Works (Utility Relocations) 42
14.1 Project Delivery 42
14.1.1 Ministry Project Delivery Overview 42
14.1.2 Importance of Communication and Coordination 42
14.2 Ministry Project Procurement Models 43
14.2.1 General Information 43
14.2.2 Day Labour 43
14.2.3 Design-Bid-Build 43
14.2.4 Design-Build 43
14.2.5 Design-Build-Finance-Operate and Public-Private Partnership 43
14.3 Utility Relocation Responsibilities 43
14.3.1 Ministry Responsibilities 43
14.3.2 Responsibilities of Utility Organizations 44
14.3.3 Shared Responsibilities 45
14.4 Utility Coordination Best Practices 45
14.4.1 Utility Relocation Planning and Coordination 45
14.5 Relocation Authorization 46
14.5.1 No Upfront Payments 46
14.5.2 Letter of Authority 46
14.5.3 Permit Authorization for Relocated Utility Infrastructure 47
14.5.4 Other Documents 47

15. Utility Fees and Compensation 48
15.1 Utility Fees 48
15.1.1 Administrative Fees 48
15.1.2 General Use Fee 48
15.1.3 Fees for Authorizations Issued in the Nature of a License 48
15.2 Compensation for Ministry-Initiated Relocations of Utility Infrastructure 49
15.2.1 General Policies of Compensation 49
15.2.2 Compensation for Utility Organizations with a Protocol Agreement 49
15.2.3 Compensation for Provincially Regulated Gas Utilities 49
15.2.4 Compensation for Provincially Regulated Oil and Gas Pipelines 50
15.2.5 Compensation for Federally Regulated Oil and Gas Pipelines 50
15.2.6 Compensation for Local Government Water, Sewer, and Irrigation Lines 50
15.2.7 Compensation for Electric Utilities 51
15.2.8 Compensation for Telecommunications Infrastructure 51
15.2.9 Compensation for Wireless Communications 51
15.2.10 Compensation for Fibre Optic Cable 51
15.2.11 Compensation for Utilities on Ministry Structures 52
15.3 Compensation for Other Scenarios 52
15.3.1 Relocation Because of a Natural Occurrence 52
15.3.2 Relocations Initiated by a Third Party 52
15.3.3 Highway Operations 52

16. General Information on Utility Policies and Standards 53
16.1 Approach to Location Policies and Technical Standards 53
16.2 Ministry Technical Standards 53
16.2.1 Highest Standards Apply 53
16.2.2 Design Responsibility 53

17. Oil and Gas Pipelines Policies and Standards 55
17.1 Description of Utilities Included in this Chapter 55
17.2 Regulations and Standards Set by Other Authorities 55
17.3 Location Policies 56
17.3.1 Prohibited Locations within Highway Right-of-Way 56
17.3.2 Unsuitable Locations within Highway Right-of-Way 56
17.3.3 Pipelines Within and Parallel to Highway Right-of-Way 57
17.3.4 Pipelines Under the Roadway 57
17.3.5 Pipeline Attachment to Ministry Structures 58
17.3.6 Pipeline Abandonment 58
17.4 Technical Standards 58
17.4.1 Crossings 58
17.4.2 Offsets 59
17.4.3 Depth of Cover 59
17.5 Protective Measures 60
17.6 Appurtenances 61
17.6.1 Conformity with Clear Zone 61
17.6.2 Aboveground Markers 61
17.6.3 Underground Markers 62
17.6.4 Vent Standpipes 62
17.6.5 Drains 62
17.6.6 Valves 62
17.6.7 Manholes 62
17.6.8 Cathodic Protection 62
17.7 Location Templates 63
17.7.1 General Location Template Information 63
17.7.2 Location Templates 1, 2, and 3 – Fill 63
17.7.3 Location Templates 1, 2, and 3 – Cut 63
17.8 Utility Location Templates by Exception 64
17.8.1 General Exception Template Information 64
17.8.2 Template 4 – Under Ditches 64
17.8.3 Template 5 – Under Sidewalks 65
17.8.4 Template 6 – Under Shoulders 66

18. Water and Sewer Lines Policies and Standards 67
18.1 Description of Utilities Included in this Chapter 67
18.2 Regulations and Standards Set by Other Authorities 67

18.3 Location Policies 67
18.3.1 Prohibited Locations Within Highway Right-of-Way 67
18.3.2 Unsuitable Locations Within Highway Right-of-Way 67
18.3.3 Water and Sewer Lines Within and Parallel to Highway Right-of-Way 68
18.3.4 Water and Sewer Lines Under the Roadway 68
18.3.5 Attachment to Ministry Structures 68
18.3.6 Abandonment of Water and Sewer Lines 69
18.4 Technical Standards 69
18.4.1 Crossings 69
18.4.2 Offsets 69
18.4.3 Depth of Cover 69
18.5 Protective Measures 70
18.6 Appurtenances 71
18.6.1 Conformity with Clear Zone 71
18.6.2 Aboveground Markers 71
18.6.3 Underground Markers 71
18.6.4 Vent Standpipes 71
18.6.5 Drains 72
18.6.6 Valves 72
18.6.7 Manholes 72
18.6.8 Cathodic Protection 72
18.7 Location Templates 72
18.7.1 General Location Template Information 72
18.7.2 Location Templates 1, 2, and 3 – Fill 72
18.7.3 Template 1, 2, and 3 - Cut 73
18.8 Location Templates by Exception 74
18.8.1 General Exception Template Information 74
18.8.2 Template 4 – Under Ditches 74
18.8.3 Template 5 – Under Sidewalks 75
18.8.4 Template 6 – Under Shoulders 75

19. Overhead Power and Communications Policies and Standards 77
19.1 Description of Utilities Included in this Chapter 77
19.2 Regulation by Other Authorities 77
19.3 Location Policies 77
19.3.1 Prohibited Locations Within Highway Right-of-Way 77
19.3.2 Unsuitable Locations Within Highway Right-of-Way 78
19.3.3 Location of Pole Lines Along Highway Right-of-Way 78
19.3.4 Single Pole Line Policy 79
19.3.5 High Voltage Transmission Lines 79
19.3.6 Attachments to Ministry Structures 79

19.4 Technical Standards 80
19.4.1 Crossings 80
19.4.2 Offsets 80
19.4.3 Clear Zone 81
19.4.4 Vertical Clearances 82
19.5 Protective Measures 84
19.6 Appurtenances 85
19.6.1 Guy Wires and Anchors 85
19.7 Location Templates 85
19.7.1 General Location Templates Information 85
19.7.2 Location Templates 1, 2, and 3 - Fill 85
19.7.3 Templates 1, 2, and 3 – Cut 86

20. Underground Power & Communication Lines Policies and Standards 87
20.1 Description of Utilities Included in this Chapter 87
20.2 Regulation by Other Authorities 87
20.3 Location Policies 87
20.3.1 Prohibited Locations Within Highway Right-of-Way 87
20.3.2 Unsuitable Locations Within Highway Right-of-way 87
20.3.3 Underground Power and Communication Lines Within and Parallel to Highway Right-of-Way 88
20.3.4 Underground Power and Communication Lines Within the Roadway 88
20.3.5 Single Pole Line Policy 88
20.3.6 Attachment to Ministry Structures 89
20.3.7 Installation Within Ministry-Owned Conduit 89
20.4 Technical Standards 89
20.4.1 Crossings 89
20.4.2 Offsets 89
20.4.3 Depth of Cover 90
20.5 Protective Measures 90
20.6 Appurtenances 91
20.6.1 Conformity with Clear Zone 91
20.6.2 Aboveground Markers 91
20.6.3 Underground Markers 91
20.6.4 Manholes 92
20.6.5 Pedestals 92
20.7 Utility Location Templates within Highway Right-of-Way 92
20.7.1 General Location Template Information 92
20.7.2 Location Template 1, 2, and 3 - Fill 92
20.7.3 Location Template 1, 2, and 3 - Cut 93

20.8 Utility Location Templates by Exception 94

20.8.1 General Exception Template Information 94

20.8.2 Template 4 – Under Ditches 94

20.8.3 Template 5 – Under Sidewalks 95

20.8.4 Template 6 – Under Shoulders 95

21. Wireless Communication Sites 97

21.1 Definitions 97

21.2 Authorizations 98

21.2.1 Master Use Agreement Required 98

21.2.2 Site Permit Required 98

21.2.3 Use of Existing Structures 99

21.2.4 Sub-licensee Authorizations 99

21.3 Siting Policies 101

21.3.1 Highway Class 101

21.3.2 Designs 101

21.3.3 Structures 101

21.3.4 Use of Existing Structures and Site Sharing 101

21.3.5 Prohibited Sites 101

21.3.6 Access 102

21.3.7 Utility Service Connections and Aboveground Objects 102

21.3.8 Clear Zone Requirements 102

21.3.9 Interference 102

21.3.10 Exposure to Radiofrequency Fields 102

21.4 Required Referrals 103

21.4.1 Public Consultation 103

21.4.2 Structural Engineering 103

21.4.3 Radio and Electronics Section 103

21.4.4 Electrical Engineering 103

21.4.5 Regional Property Services 103

21.4.6 Regional Partnerships and Planning; Project Delivery 103

21.5 Annual Fees 104

22. Fibre Optic Communications Systems in Ministry-Owned Conduit 105

22.1 About Ministry-Owned Conduit: 105

22.2 Definitions 105

22.3 Authorizations 106

22.3.1 Master Use Agreement Required: 106

22.3.2 Permit Required: 106

22.4 Siting Policies 106

22.4.1 Highway Class 106

22.4.2 Access 106

22.4.3 Utility Service Connections 106

22.4.4 Clear Zone Requirements 106

22.5 Required Referrals....107
22.5.1 ITS Engineering.... 107
22.5.2 Structural Engineering.... 107
22.5.3 Regional Partnerships and Planning; Project Delivery.... 107
22.6 Annual Fees....107
22.6.1 Background to Fees 107
22.6.2 Collection of Fees 107

23. Independent Power Producers....108
23.1 Approach to Independent Power Producers....108
23.1.1 General Overview 108
23.1.2 Policies and Standards for Independent Power Producers 108
23.1.3 Permitting Restrictions 108
23.1.4 Future Relocations.... 109

24. Intentionally left blank....110

25. Method of Utility Installation....111
25.1 Ministry Approach to Utility Installation....111
25.2 Trenchless Technology 111
25.2.1 General Policies and Standards 111
25.2.2 Jacking and Boring Pits.... 112
25.3 Trenching Policies and Standards 112
25.3.1 No Trenching without Written Approval 112
25.3.2 Requirements for Trenches Crossing Gravel Surface Roads 113
25.3.3 Requirements for Trenches Crossing Paved Roads.... 113
25.3.4 Requirements for Trenches Crossing Driveways and Entrances 114
25.3.5 Trench Backfill Requirements 115
25.3.6 Restoration of Ditches.... 116
25.4 Trench Resurfacing....116
25.4.1 Temporary Patching.... 116
25.4.2 Gravel Surfacing.... 116
25.4.3 Shoulders 116
25.4.4 Permanent Patching.... 117
25.5 Blasting....117
25.6 Installation of Fibre Optic Infrastructure through Microtrenching 117
25.6.1 About Microtrenching.... 117
25.6.2 Alternative Installation Methods Must be Ruled Out 118
25.6.3 Paralleling.... 118
25.6.4 Crossings.... 118

26. Utility Attachments to Ministry Structures....119
26.1 Approach to Utility Attachment to Ministry Structures....119
26.1.1 Approvals Considered on a Case-by-Case Basis 119
26.1.2 Utility Organizations Must Provide Rationale 119
26.1.3 Policies and Standards.... 119

26.2 Restrictions by Utility Type 119

26.2.1 Oil and Gas Pipelines 119

26.2.2 Water and Sewer Lines 120

26.2.3 Power and Communications Lines 120

26.3 General Policies and Standards 120

26.3.1 Location 120

26.3.2 Provisions for Bridge Maintenance 121

26.3.3 Attachments 121

26.3.4 Abutments 121

26.3.5 Shut-off Valves 121

26.3.6 Vibration 122

26.3.7 Insulation 122

26.3.8 Expansion 122

26.3.9 Loading 122

26.4 Drawings 122

26.4.1 Engineered Drawings Required 122

26.4.2 Drawing Title Blocks 122

26.4.3 Type of Utility 122

26.4.4 Loading 123

26.4.5 Location 123

26.4.6 Details 123

26.4.7 Design Codes 123

26.4.8 Expansion and Contraction 123

26.4.9 Earthquakes 123

27. Exceptions and Referrals 124

27.1 Exceptions 124

27.1.1 General Information About Exceptions 124

27.1.2 Exception Process 124

27.1.3 Exceptions Impacting Highway Safety or Operations 125

27.1.4 Exceptions to Technical Standards 125

27.1.5 Exceptions to Location Policies 126

27.2 Referrals 126

27.2.1 Referrals Based on Type of Application 126

27.2.2 Referrals Based on Agreements 127

Glossary 129

Appendix A – Region and District Contact Information 135

Appendix B – Clear Zone Tables 137

Appendix C – Technical Circulars 140

1. INTRODUCTION TO THE UTILITY POLICY MANUAL

References

Legislation:

- Transportation Act

Documents and other Sources:

- Ministry of Transportation and Infrastructure Website

1.1 About this Manual

1.1.1 General Context

a) The Ministry of Transportation and Infrastructure (the Ministry) plans transportation networks, provides transportation services and infrastructure, develops and implements transportation policies, and administers many transportation-related acts and regulations. This includes responsibility for planning, building, maintaining, and operating British Columbia's provincial highway network to move people and goods safely and efficiently. The Ministry has jurisdiction over all roads and highways (including controlled access highways) that lie outside of incorporated cities and municipalities, as well as arterial highways which are provincial highways that run through a municipality. More information about the Ministry is available on the Ministry's website at the following link: https://www2.gov.bc.ca/gov/content/governments/organizational-structure/ministries-organizations/ministries/transportation-and-infrastructure.

b) Utility organizations provide services and commodities in the public interest, including natural gas, electric power, telecommunications, and water and sewer services. Utility organizations may apply to install within highway right-of-way utility infrastructure necessary to convey these commodities and services to users. In accordance with applicable legislation, the Ministry may authorize such installations where, at the Ministry's discretion, the Ministry's policies, standards, and procedures are sufficiently met.

1.1.2 Purpose and Scope of this Manual

a) This manual sets out the policies, standards, and procedures which the Ministry has put in place to manage highway right-of-way use by utility organizations.

b) This manual is for the benefit of utility organizations seeking to install, operate, and maintain utility infrastructure on highway right-of-way, as well as Ministry staff responsible for permitting, relocating, or otherwise impacting utility infrastructure on highway right-of-way.

c) This manual draws on information, policies, standards, and procedures contained in other documents, including: legislation, industry and Ministry publications, and agreements that the Ministry has with specific utility organizations. If there is a discrepancy between this manual and a referenced source, the directions, policies, standards, and procedures set out in the referenced source (or successor documents) apply.

d) Given the range of possible activities and scenarios involving utility infrastructure, this manual is not intended to be a full and complete guide for utility infrastructure on highway right-of-way. Moreover, this

manual is not intended as a substitute for professional experience—sound judgement and experience of knowledgeable practitioners should always be exercised in specific circumstances.

e) Unless contrary to legislation, the ultimate decision to authorize utility infrastructure on highway right-of-way remains with Ministry staff who have the delegated authority of the Minister of Transportation and Infrastructure under the Transportation Act. Highway safety and operational considerations are always paramount. Meeting the minimum policies and standards in this manual does not guarantee that the Ministry will accept and authorize new and/or modified utility infrastructure on highway right-of-way.

1.1.3 Manual Administration

a) This manual is a living document which will be updated regularly; however, information, policies, standards, and procedures can change from time to time and may not always be captured fully or accurately within this manual at a given moment. Neither the Ministry nor the individual authors and contributors of this manual are responsible for any incorrect or incomplete information presented in this manual.

b) This manual is under the administration of the Senior Project Manager, Utilities Services in the Ministry's Victoria headquarters. Any comments or questions related to the information in this manual should be directed to him/her.

1.2 General Information about Utilities Covered in this Manual

1.2.1 Utilities Definitions

a) ***Utility infrastructure:*** Means any physical line, facility, system, equipment, installations, or appurtenances owned and operated by a utility organization to facilitate the transmission, distribution, or deliver of:

- Electricity;
- communications and intelligence;
- gas, oil and petroleum products;
- water;
- sewage; or
- any other similar commodity, and includes underground, surface, and overhead infrastructure.

b) ***Utility Organization:*** Means any company or entity, whether public or private, and whether regulated or unregulated, that has or intends to install, operate, and maintain utility infrastructure within highway right-of-way.

c) ***Utility:*** Means either "utility infrastructure" or "utility organization" as the context provides.

1.2.2 Public Utilities

a) The term public utility refers to organizations which provide utility services to the general public. Public utility organizations may be publicly owned (e.g. Crown corporations) or investor-owned for-profit organizations.

b) Many public utilities are regulated by a governing board or commission at either the provincial or federal level. These regulated utilities are required to meet policies and standards as per legislation and/or as imposed by their regulator. See Chapter 2 for more information on regulated utilities in British Columbia.

c) In the context of this manual, the term public utility also refers to local governments such as regional districts and municipalities which provide utility services to residents and businesses.

1.2.3 Private Utilities

a) In the context of this manual, the term private utility does not specifically refer to ownership status (i.e. owned by the public as a Crown corporation vs. investor-owned). Rather, a private utility is defined as an entity or organization which owns and operates utility infrastructure that serves only a select and limited group of persons or a company, and not the overall public interest.

b) Private utility infrastructure may not serve the wider public interest and may also present undue risks if installed within highway right-of-way. As such, the Ministry generally discourages the installation of private utility infrastructure within public highway right-of-way.

c) Despite (a) and (b) above, the Ministry may still authorize private utility infrastructure within highway right-of-way at the discretion of Ministry staff on a case-by-case basis. Where other practical routing options exist outside the highway right-of-way, those options should be analyzed and ruled out before permitting use of highway right-of-way.

1.3 Source Materials

1.3.1 References to Source Materials

a) A variety of sources, including legislation, agreements, publications, reports, and other documents related to utilities on highway right-of-way are referenced throughout this manual. These sources are referenced in each chapter and hyperlinked where possible/practical.

b) The source materials referenced in this manual (including any subsequent updates or successor documents) should be reviewed for additional information as needed. Moreover, the sources referenced in this manual are not meant to be viewed as a complete and/or finite list of relevant sources regarding the installation of utility infrastructure within highway right-of-way.

1.4 Ministry Organization and Structure

1.4.1 Departmental Overview

a) The Ministry of Transportation and Infrastructure is headquartered in Victoria. The Ministry is divided into the following four departments, each responsible for various aspects of the Ministry's mandate and operations:

- Highway Services Department
- Major Projects, Infrastructure, and Properties Department
- Finance and Management Services Department
- Transportation Policy and Programs Department

b) The Highways Department is responsible planning, designing, constructing, operating, maintaining, and rehabilitating the provincial highway and bridge network. By way of Development Services staff in each of the Ministry's eleven Districts, it is also the department responsible for authorizing the installation of utility infrastructure within highway right-of-way.

c) The Highway Services Department plans and delivers highway improvement and expansion projects. These projects often impact or require the relocation of utility infrastructure within (and sometimes outside) highway right-of-way.

d) The Major Projects, Infrastructure, and Properties Department is responsible for the planning and delivery of major capital projects which may also impact or require the relocation of utility infrastructure.

1.4.2 Highway Regions

a) The Highway Services Department is geographically divided into three Regions (for a map see Figure 1-1). Regional office locations are in brackets:

Region 1: South Coast Region (Coquitlam)

Region 2: Southern Interior Region (Kamloops)

Region 3: Northern Region (Prince George)

b) Regions are responsible for delivering large-scale highway expansion and improvement projects. These projects sometimes involve the relocation of utility infrastructure both on and off highway right-of-way. See Appendix A for Regional contact information.

Figure 1-1: Highway Regions

1.4.3 Highway Districts

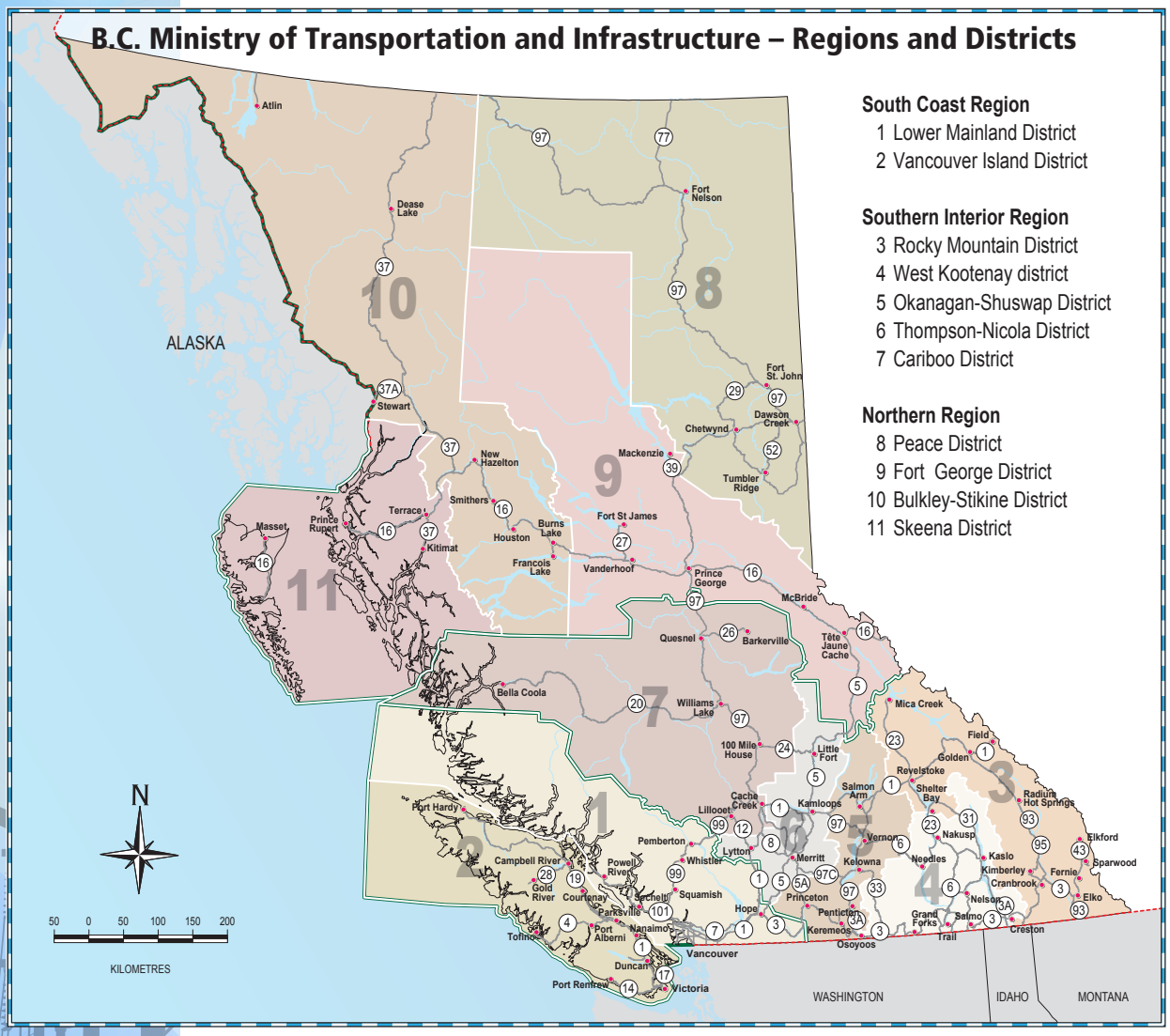
a) The Ministry's three Regions are further geographically subdivided into eleven Districts (for a map see Figure 1-2). Each District has a main office (shown in brackets), as well as smaller area offices. See Appendix A for District contact information.

South Coast Region	Southern Interior Region	Northern Region
1. Lower Mainland District (Coquitlam)	3. Rocky Mountain District (Cranbrook)	8. Peace District (Fort St. John)
2. Vancouver Island District (Nanaimo)	4. West Kootenay District (Nelson)	9. Fort George District (Prince George)
	5. Okanagan-Shuswap District (Kelowna)	10. Bulkley-Stikine District (Smithers)
	6. Thompson-Nicola District (Kamloops)	11. Skeena District (Terrace)
	7. Cariboo District (Williams Lake)	

b) District staff are responsible for the day-to-day operations of the provincial highway network. Development Services staff within each District are responsible for receiving and reviewing applications for utility infrastructure within highway right-of-way, and for issuing authorizations for approved applications.

c) A District may only issue authorizations for the installation, operation, and maintenance of utility infrastructure on provincial highways within that District's respective boundaries.

Figure 1-2: Highway Districts



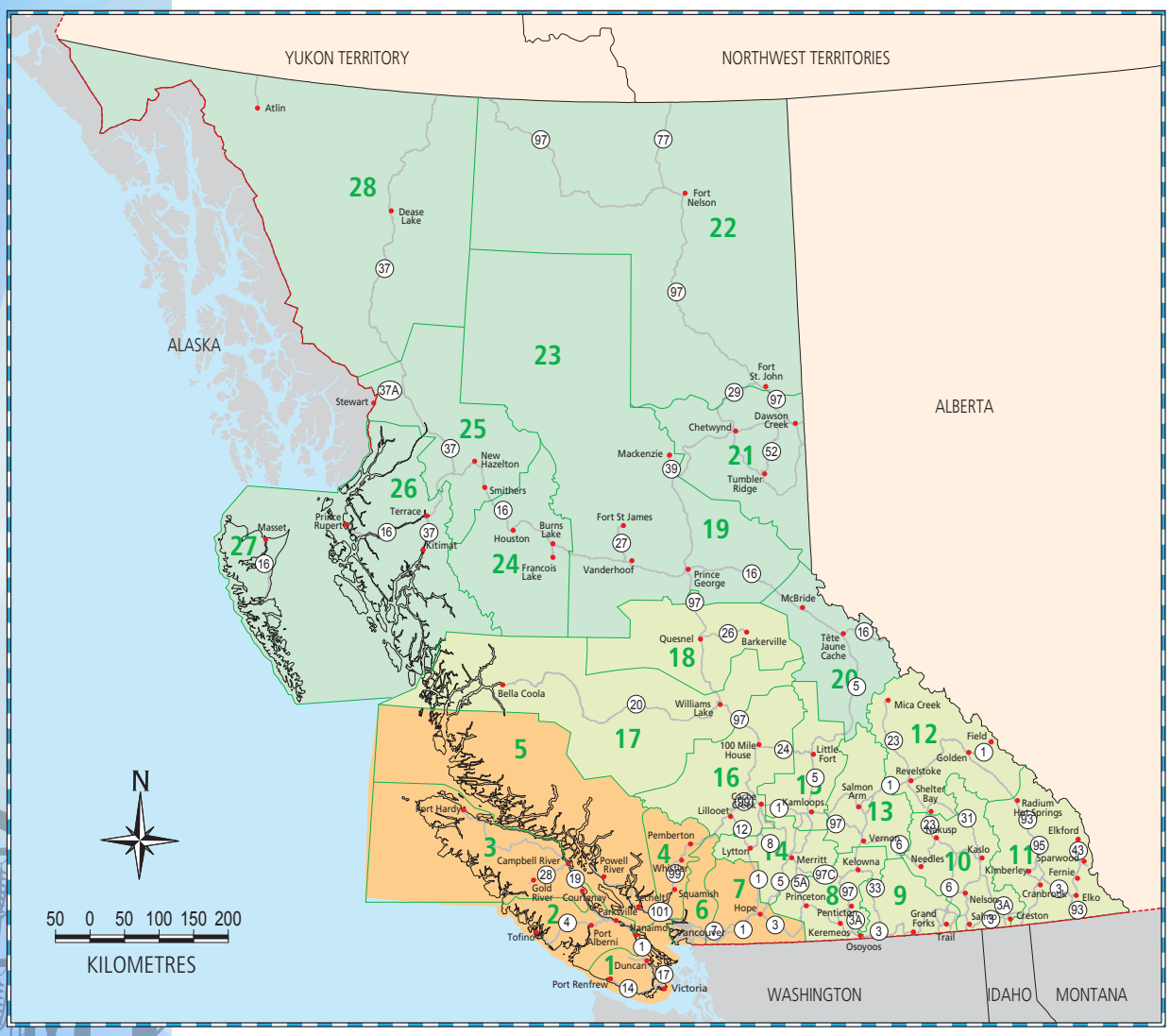
1.4.4 Service Areas

a) The Ministry's eleven Districts are each further divided into 28 Service Areas (see Figure 1-3). Maintenance contractors are responsible for maintaining the highway right-of-way within each Service Area. Maintenance contractors may also deliver small-scale highway improvement or emergency projects that could impact utility infrastructure.

1. South Island
2. Central Island
3. North Island
4. Howe Sound
5. Sunshine Coast
6. Lower Mainland
7. Fraser Valley
8. South Okanagan
9. Kootenay Boundary
10. Central Kootenay
11. East Kootenay
12. Selkirk
13. Okanagan-Shuswap
14. Nicola
15. Thompson
16. South Cariboo
17. Central Cariboo
18. North Cariboo
19. Fort George
20. Robson
21. South Peace
22. North Peace
23. Nechako
24. Lakes
25. Bulkley Nass
26. Skeena
27. North Coast
28. Stikine

b) More information on Maintenance Service Areas is available on the Ministry's website.

Figure 1-3: Service Areas



2. UTILITIES ACCOMMODATION

References

Legislation:

- National Energy Board Act (Canada)
- Oil and Gas Activities Act
- Radiocommunication Act (Canada)
- Safety Standards Act
- Telecommunications Act (Canada)
- Transportation Act
- Utilities Commission Act

Documents and other Sources:

- Ministry Certificate of Insurance (H0111) form
- Ministry Insurance and Bonds Manual (not viewable externally)
- Technical Circular T-12/94 – Single Pole Line Policy

2.1 General Policies of Utilities Accommodation

2.1.1 Benefits of Accommodating Utilities within Highway Right-of-Way

a) The Ministry recognizes that the use of highway right-of-way by utilities is a means to provide services and commodities to citizens and industry, and that the provision of such services and commodities is within the public interest.

b) Although the Ministry recognizes the various benefits provided by utilities, this recognition does not mean that all utility infrastructure can or will be accommodated within highway right-of-way in all circumstances.

2.1.2 Paramounce of Safety, Highway Operations, and Future Highway Development

a) The use of highway right-of-way by utility organizations is always subordinate to the Ministry's primary responsibilities of ensuring the safety of the travelling public, the operational efficiency and integrity of the highway, and the Ministry's ability to make improvements to meet future transportation needs.

b) The onus is on the utility organization to prove to the satisfaction of Ministry staff that its utility infrastructure meets the Ministry's policies and standards, as well as any project or site-specific requirements imposed by Ministry staff.

2.1.3 Utilities Use Highway Right-of Way at Their Own Risk

a) Although the Ministry's staff and contractors make every reasonable effort to ensure that highway work on highway right-of-way does not damage utilities, the Ministry does not accept responsibility for loss of any services or damage to utility infrastructure and equipment within the highway right-of-way or for any third-party liability related to such infrastructure or equipment.

2.1.4 Utility Infrastructure Must be Authorized

a) The Ministry must authorize all utility infrastructure on highway right-of-way prior to installation. Utility organizations must not install utility infrastructure on highway right-of-way without first applying for and receiving written authorization from the Ministry.

b) The Ministry issues authorizations for utility infrastructure in the form of permits (see Chapter 3).

2.2 Powers of the Minister of Transportation and Infrastructure

2.2.1 Power to Issue Authorizations

a) The power to authorize utility infrastructure on highway right-of-way is vested in the Minister of Transportation and Infrastructure under section 62 of the Transportation Act.

b) If applications are approved, the Ministry will issue written permits to utility organizations to install, operate, and maintain the utility infrastructure in a specific area. The permit contains both general and site-specific terms and conditions by which the utility organization must abide (See Chapter 3).

2.2.2 Employees with the Minister's Delegated Authority

a) The wording in the Transportation Act refers to powers of the Minister, but in practice these powers are delegated to specific Ministry employees. These Ministry employees are deemed statutory decision makers as they have the "delegated authority" of the Minister to authorize and control utilities on highway right-of-way.

b) Although many employees have the Minister's delegated authority, District Development Services staff in each of the Ministry's eleven Highways Districts are responsible for receiving and reviewing applications from utility organizations, coordinating with applicants, and ultimately issuing permits for approved applications.

2.3 Regulated Utilities

2.3.1 General Overview

a) Federal and provincial legislation confers certain rights, responsibilities, and limitations on regulated utility organizations with respect to the occupation of highway right-of-way. Such legislation also establishes and gives power to various governing boards and commissions to regulate certain utility organizations or utility types at either the federal or provincial level.

b) Regulated utility organizations must generally receive permission from their regulators to construct and operate their infrastructure, and must also abide by the respective standards, policies, orders, and decisions of their regulators.

c) The Transportation Act requires that utility organizations receive written permission from the Ministry to construct and operate utility infrastructure on highway right-of-way. With respect to federally regulated utilities, however, the applicable board or commission may have the authority to grant permissions or otherwise inform or decide on terms and conditions related to the occupation of highway right-of-way where the Ministry and the utility organization cannot come to mutual agreement.

Table 2-1: Regulated Utilities

Utility Type	Voltage Pressure	Regulator	Regulatory Jurisdiction
Electric Utilities	All voltages	British Columbia Utilities Commission (BCUC)	Provincial
Gas Utilities *(intraprovincial – i.e. infrastructure is entirely within B.C.)*	Less than 700 kPa pressure	British Columbia Utilities Commission (BCUC) Technical Safety BC	Provincial
Oil and Gas Pipelines *(intraprovincial – i.e. pipeline is entirely within B.C.)*	Equal to or greater than 700 kPa pressure	British Columbia Oil and Gas Commission (BCOGC)	Provincial
Oil and Gas Pipelines *(interprovincial or international – i.e. pipeline crosses provincial or national borders)*	All pressures	National Energy Board (NEB)	Federal
Wireline Telecommunications Facilities *(e.g. fibre optic and other communications cable)*	N/A	Canadian Radio-television and Telecommunications Commission (CRTC)	Federal
Wireless Telecommunications Facilities *(e.g. cellular towers and antennas)*	N/A	Innovation, Science, and Economic Development Canada (ISED)	Federal

2.3.2 Provincially Regulated Electric Utilities

a) Public electric power utilities in British Columbia, including BC Hydro and FortisBC, are regulated by the British Columbia Utilities Commission (BCUC) pursuant to the Utilities Commission Act and associated regulations.

b) The Utilities Commission Act gives the BCUC extensive regulatory powers, including the power to make legally binding decisions related to the construction and operation of utility infrastructure. The BCUC's primary responsibility, however, is the regulation of energy utilities to ensure the rates charged are fair, just and reasonable, that utility organizations provide safe, adequate and secure services to customers. More information about the BCUC is available on the commission's website: https://www.bcuc.com/.

2.3.3 Provincially Regulated Gas Utilities (less than 700 kPa pressure)

a) Gas utility infrastructure less than 700 kPa pressure is regulated by the British Columbia Utilities Commission (BCUC) under the Utilities Commission Act and associated regulations.

b) The Utilities Commission Act gives the BCUC extensive regulatory powers, including the power to make legally binding decisions related to the construction and operation of utility infrastructure. The BCUC's primary responsibility, however, is the regulation of energy utilities to ensure the rates charged are fair, just and reasonable, and that utility organizations provide safe, adequate and secure services to customers. More information about the BCUC is available on the commission's website: https://www.bcuc.com/.

c) Safety and standards for gas utility installations less than 700 kPa pressure are regulated by Technical Safety BC under the Safety Standards Act, Safety Standards General Regulation, and the Gas Safety Regulation.

d) More information on Technical Safety BC is available on the organization's website: https://www.technicalsafetybc.ca/.

2.3.4 Provincially Regulated Oil and Gas Pipelines (greater than 700 kPa pressure)

a) Most intraprovincial oil and gas pipelines greater than 700 kPa pressure are regulated by the British Columbia Oil and Gas Commission (BCOGC) under the Oil and Gas Activities Act and associated regulations.

b) Section 34 (2) (b) of the Oil and Gas Activities Act prohibits a provincially-regulated pipeline company from carrying out an oil or gas activity (including the construction or operation of a pipeline) on highway right-of-way without first obtaining an authorization from the Ministry.

c) More information on the BCOGC is available on the commission's website: https://www.bcogc.ca/.

2.3.5 Federally Regulated Oil and Gas Pipelines

a) Oil and gas pipelines that cross provincial or national borders, such as those crossing into Alberta or the United States, are regulated at the federal level by the National Energy Board (NEB) under the National Energy Board Act and associated regulations.

b) The NEB has the power to authorize construction of a federal pipeline across or within highway right-of-way. Such authorizations by the NEB may constrain some of the powers of the Minister of Transportation and Infrastructure; however, they generally maintain the Minister's ability to set the terms and conditions of occupation and use of highway right-of-way.

2.3.6 Federally Regulated Telecommunications Facilities (Wireline)

a) Telecommunications facilities (wireline) are federally regulated by the Canadian Radio-television and Telecommunications Commission (CRTC) under the federal Telecommunications Act and associated regulations.

b) Under section 43 of the federal Telecommunications Act, telecommunications companies have certain rights to construct telecommunications facilities on highway right-of-way but must first obtain the consent of the Ministry and "shall not unduly interfere with the public use and enjoyment of the highway."

c) If a telecommunications company and the Ministry cannot agree on acceptable terms and conditions related to the construction of telecommunications facilities on highway right-of-way, either the telecommunications company or the Ministry may apply to the CRTC for an order determining such terms and conditions.

d) More information on the CRTC is available on the commission's website: https://crtc.gc.ca/eng/home-accueil.htm.

2.3.7 Wireless Communication Sites

a) Innovation, Science, and Economic Development Canada (ISED), under authority of the federal Radiocommunication Act, sets policies for establishing and operating wireless communications (e.g. cellular) sites.

b) More information about ISED, including antenna tower siting procedures, is available on the agency's website: http://www.ic.gc.ca/eic/site/smt-gst.nsf/eng/h_sf11435.html.

2.4 Approvals from other Agencies

2.4.1 Utility Organizations are Responsible for Obtaining Additional Approvals

a) Utility organizations are responsible for consulting with and/or obtaining all required approvals and consent for utility infrastructure on highway right-of-way from other applicable agencies and entities, including (but not limited to):

i. Federal and provincial regulators;

ii. Federal, provincial, and local governments;

iii. First Nations;

iv. Adjacent landowners; and

v. Other utility organizations.

b) Utility organizations are responsible for ensuring the installation, operation, and maintenance of their utility infrastructure on highway right-of-way complies with the terms and conditions set out in any required approvals from other agencies or entities.

2.5 Utility Policies by Class of Highway

2.5.1 Utilities are Permitted on Most Classes of Highway

a) With respect to chapter 2.1.2, and unless otherwise specified, utility infrastructure may generally be installed within highway right-of-way regardless of the type of utility or class of highway.

2.5.2 Utilities Prohibited Within and Parallel to Certain Rights-of-Way

a) Utility infrastructure is not permitted within and parallel to highway right-of-way in the following situations. Unless otherwise specified, exceptions must be approved by the Office of the Chief Engineer.

i. No utilities within and parallel to freeway and expressway rights-of-way except in areas adjacent to and outside frontage roads (the power of the minister on a schedule one highway includes power outside the highway right-of-way);

ii. No pipelines operating at pressures equal to or greater than 700 kPa within and parallel to any class of highway right-of-way;

iii. No underground electrical infrastructure equal to or greater than 69 kV nominal voltage within and parallel to any class of highway right-of-way;

iv. No overhead electric transmission infrastructure greater than 287 kV nominal voltage within and parallel to any class of highway (Note: Protocol Agreements may place further restrictions and/or procedures on overhead electric transmission infrastructure greater than 100 kV); and

v. No utilities of any kind on bridges, in tunnels, or on other structures except as approved by the Ministry's Structural Engineering group or Office of the Chief Engineer.

2.5.3 Most Utilities Can Cross All Classes of Highway

a) Most utilities can cross all classes of highway, except in the following situations. Unless otherwise specified, exceptions must be approved by the Office of the Chief Engineer.

i. Underground electrical infrastructure at or greater than 138 kV is not permitted to cross any class of highway; and

ii. Except for high voltage transmission lines rated at 138 kV or greater, overhead telecommunication and electric power line installations are not permitted to cross freeways or expressways.

2.5.4 Utilities May Not be Permitted to Use Certain Right-of-Way

a) The Ministry may prohibit or restrict utilities from using any highway right-of-way where the installation, operation, and maintenance of such utility infrastructure:

i. Compromises the safety of highway users;

ii. Creates unsafe working conditions for the Ministry's staff or contractors;

iii. Unduly interferes with the Ministry's maintenance activities;

iv. Puts existing highway infrastructure at risk of damage;

v. Restricts planned future highway expansion or improvement projects; or

vi. Is proposed to be located in or adjacent to sensitive areas (e.g. environmentally or archaeologically sensitive areas).

2.6 Utility Coordination

2.6.1 Coordination Between the Ministry and Utility Organizations

a) Where utilities are accommodated within highway right-of-way, they are accommodated on a "first come, first served" basis. The Ministry will not reserve sections of highway right-of-way for specific utility organizations or utility types.

b) The Ministry coordinates the location and construction of utility installations through the authorization process (see Chapter 3). During the authorization process, the Ministry reviews and considers applications with respect to its primary mandate of safety, efficient highway operations, and ability to make future highway improvements.

c) As a condition of installing utility works within highway right-of-way, utility organizations must coordinate their work activities (including installation, removal, or relocation of their utility infrastructure) with the Ministry and its contractors. Utility organizations must also coordinate

with and respond to requests in a timely manner from the Ministry and/or its contractors in order for the Ministry to undertake highway maintenance, rehabilitation, and improvement projects and activities.

2.6.2 Coordination Between Utility Organizations

a) Technical or compatibility issues between utilities (such as required clearances) must be resolved between the utilities themselves in accordance with industry, Canadian Standards Association, or regulator standards as applicable. The Ministry will not resolve technical or compatibility issues between utilities and generally does not have the technical expertise required to resolve them.

2.6.3 Single Pole Line Policy

a) Electrical and telecommunications utility organizations are required to coordinate and share overhead poles and support structures in accordance with the Ministry's Single Pole Line Policy (See Chapter 19.3.4).

b) The Single Pole Line Policy is intended to support highway right-of-way management objectives through better joint planning of facilities, promote highway safety by limiting the number of aboveground objects within highway right-of-way, and promote a more efficient use of limited highway right-of-way.

2.7 Risk and Risk Management

2.7.1 Risk Overview

a) All utility installations within highway right-of-way present some form and degree of risk that may impact the Ministry's primary objectives of ensuring the safety of highway users, the integrity and efficient operation of the highway, and the Ministry's ability to make future highway improvements.

b) Once identified, risk can be avoided, mitigated, transferred, or accepted.

c) For more information on risk and risk management, Ministry staff should consult the Ministry Insurance and Bonds Manual and/or seek assistance from the Ministry's Corporate Insurance and Bonds group in Headquarters.

2.7.2 Risk Management

a) Risk management involves systematic, effective methods to protect the public and the Ministry's interests. More specifically, risk management is the process of:

   i. Identifying the risks associated with an initiative or action;

   ii. Assessing the liability associated with that risk as well as the likelihood of a failure or accident and the nature and extent of the damages that might result; and

   iii. Finding the most efficient and economical way of bringing those risks to within acceptable limits.

b) By accommodating utilities within highway right-of-way, the Ministry is prepared to accept a certain level of risk. The Ministry's acceptable level of risk pertaining to utility infrastructure within highway right-of-way is rooted in the policies and standards in this manual, as well as various other documents and sources (whether cited in this manual or not).

c) Risk beyond the Ministry's level of acceptance requires mitigation or transfer, and possibly avoidance (e.g. through denial of an application).

d) The Ministry has the sole discretion to evaluate the risks posed by utilities seeking to install, operate, and maintain utility infrastructure within highway right-of-way, and to determine what risk mitigation or transfer measures or instruments may be required.

e) District staff have the principle responsibility for evaluating risks posed by utility infrastructure within highway right-of-way. District staff must carefully consider the nature of each proposed utility installation, any risk(s) that it presents, and the past performance and reliability of the utility organization, its crews, and its contractors to meet and follow Ministry policies and standards. To a large extent, the Ministry's approach to risk management is to hold utilities fully responsible for their own facilities and actions, and to use a range of risk control methods to ensure that they comply with Ministry requirements.

f) Utilities on highway right-of-way may present risks in several areas. These areas include (but are not limited to):

   i. Traffic and highway safety (e.g. equipment operating in the right-of-way, obstructions in the right-of-way, the risk of fire, etc.);

   ii. Third party risks;

   iii. Worker safety (e.g. if a pipeline is struck by ditching, sign or rock scaling crews);

   iv. Damage to highway infrastructure (e.g. damage caused by a pipeline failure); and

   v. Restrictions on future highway development.

g) To mitigate or transfer risk posed by utility infrastructure within highway right-of-way, the Ministry may require:

   i. That an application which does not meet the Ministry's policies and standards be reviewed and approved on an exception basis;

   ii. Professionally engineered designs and solutions;

   iii. Proof of insurance in an amount acceptable to the Ministry (proof of insurance must be submitted using the Ministry's Certificate of Insurance (H0111) form;

   iv. Indemnities;

   v. Financial securities such as an Irrevocable Letter of Credit (ILOC) (note: the ILOC amount is typically 150% of the value of the proposed works, however, District Development Services staff can alter this amount at their discretion on a case-by-case basis. It is recommended that District Development Services staff consult with the Ministry's Corporate Insurance and Bonds group in Headquarters before altering an ILOC amount); and/or

   vi. Any other measure or instrument that the Ministry considers appropriate.

h) Applications for utility infrastructure that present an unacceptable level of risk that cannot be mitigated or transferred may be denied at the Ministry's sole discretion.

   i) Utility organizations must be prepared to accept the risks of installing, operating and maintaining utility infrastructure within

highway right-of-way. The permit issued by District Development Services staff will include the standard permit clause stating that the utility organization shall at all times indemnify and save harmless the Ministry, its agents and employees, from and against all claims, liabilities, demands, losses, damages, costs and expenses, fines, penalties, assessments and levies, noting that the wording of this clause has changed over time.

2.7.3 Site Inspection/Quality Audit and Monitoring

a) At the discretion of the Ministry, Ministry staff and/or its contractors may inspect utility installations or monitor utility construction or maintenance activities to ensure that the highway right-of-way is not put at any undue risk, and to ensure that utility organizations are adhering to Ministry policies and standards.

3. UTILITY-INITIATED WORKS (PERMITS)

References

Legislation:

- Transportation Act

Documents and other Sources:

- Highway Permits and Approvals Manual
- Provincial Public Highway Permit Application Form (H0020 Form)
- Traffic Management Manual for Work on Roadways
- Work Notification/Lane Closure Request and Approval Form (H1080 Form)

3.1 General Information about Authorizations

3.1.1 Authorizations are Required for all Utility Installations

a) As per section 62 of the Transportation Act, all utility organizations require an authorization from the Ministry to install, operate, and maintain utility infrastructure on highway right-of-way.

b) Authorizations must be in the form of a written permit and issued by a Ministry employee with the delegated authority of the Minister. Typically, this will be a member of the District's Development Services group.

c) Utility organizations may perform only the activities expressly authorized in the Ministry-issued permit and must abide by all terms and conditions contained in the permit.

d) Certain utility organizations or types require additional agreements before they may install, operate, or maintain infrastructure or equipment within highway right-of-way. For example, telecommunications companies must have a valid Master Use Agreement before installing wireless communication equipment on highway right-of-way (see Chapter 21) or fibre optic cable within conduit owned by the Ministry (see Chapter 22).

3.1.2 Power to Authorize Utilities

a) The statutory power to authorize utility infrastructure and equipment within highway right-of-way is vested in the Minister of Transportation and Infrastructure under sections 62 (1) and (2) of the Transportation Act, which state:

i. *62 (1) A person must not use or occupy, including do anything to or cause any thing to be constructed or deposited on, a provincial public highway or any land or improvement related to a provincial public highway, unless the person is authorized to do so under this Part, under another enactment, by a lease entered into under section 13 (2) (a) or at law.*

ii. *62 (2) The minister may, on terms and conditions the minister considers appropriate, authorize any person to use or occupy, in any manner and for any purpose, including a commercial purpose, the whole or any part of a provincial public highway, or land or improvements related to a provincial public highway, and, in that event, the person may engage in the authorized activity despite any other provision of this Act.*

3.1.3 Power to Give Notice for Unauthorized Use

a) Pursuant to section 63 of the Transportation Act, the Minister may give notice to a utility organization which the Minister believes is occupying highway right-of-way without prior authorization (i.e. a permit).

b) The notice must require the utility organization to stop any contravention that the Minister believes is ongoing and may require the utility organization take specified remedial actions.

3.1.4 Power to Amend and Terminate Authorizations

a) The Minister has the power to amend or terminate authorizations for a variety of reasons under section 62 (5) of the Transportation Act. Reasons include protecting the physical or operational integrity of the highway and/or the safety of persons using the highway, or the permit holder has breached any of the terms and conditions of the authorization. The permit document itself may also include specific clauses giving the Ministry additional rights to amend or terminate the authorization.

3.1.5 Permit Expiration

a) Unless specifically noted in the permit document, permits generally do not expire and are valid for the life of the utility infrastructure from construction, through operation, to eventual decommission and removal (or abandonment in a manner approved by the Ministry or as approved by law). Note that expiration is different than termination as described in Chapter 3.1.4.

3.1.6 Jurisdiction

a) Ministry-issued permits are only valid for the installation, operation, and maintenance of utility infrastructure on highway right-of-way pursuant to the Transportation Act. Permits issued by the Ministry do not authorize utility organizations to install utility infrastructure within municipal road right-of-way or on private property.

b) Ministry-issued permits are no longer valid when there is a change in highway jurisdiction such as when a highway is devolved to a municipality. Upon transfer of lands, the Ministry-issued permits for any utility infrastructure on such land are terminated and the utility organization must seek arrangements for accommodation with the new landowner (see Chapter 4.1).

c) Permits issued by other jurisdictions and authorities are not valid on highway right-of-way. A new Ministry-issued permit is required for any existing utility infrastructure on newly acquired lands which become part of the provincial highway network. This may occur, for example, if the Ministry resumes a road from a municipality.

3.2 When New or Amended Permits Are Required

3.2.1 When New Permits Are Required

a) A new permit is required for:

i. The installation of net new utility infrastructure anywhere on highway right-of-way, including when attached to a bridge or other structure.

ii. Relocating existing, permitted utility infrastructure on highway right-of-way to a different location on highway right-of-way, whether

the relocation is at the utility organization's own volition, requested by a third party (such as a developer), or at the Ministry's request to accommodate a highway improvement project.

iii. Installing underground nearside or far side service connections, regardless of utility type.

iv. Modifying the primary, previously authorized purpose of a utility installation (e.g. adding wireless communications equipment to an already-permitted power pole requires a new, additional wireless site permit).

3.2.2 When Amended Permits are Required

a) An amended permit for utility infrastructure already authorized by the Ministry is required for:

i. Adding, subtracting or otherwise changing antennas and other equipment at a wireless communications site (see Chapter 21).

ii. Materially upgrading the utility infrastructure in the same location such as by increasing size, pressure, capacity, capability, etc.

3.2.3 When New or Amended Permits Are Not Required

a) A new or amended permit for utility infrastructure already authorized by the Ministry is not required for:

i. Routine maintenance or repair to existing permitted utility infrastructure or equipment in accordance with normal operations or replacement of a single pole with a new pole immediately adjacent to the pole being replaced.

ii. Replacement of existing permitted overhead power or telecommunications poles (from 3 to 5 in direct sequence depending on the clauses of any applicable Protocol Agreements and provided the existing setback distance from the travelled way is maintained or increased).

iii. Installing overhead electrical or telecommunications nearside or far side service connections. (Note: review and coordination by the District is still required before installation to ensure the crossing is acceptable. Utility organizations should contact the applicable District to discuss their proposal as early as possible. A new permit will be required if any additional poles on highway right-of-way are required).

iv. Installing additional supports such as anchors, guy wires, and push-brace poles to an existing, permitted pole (Note: review and coordination by the District is still required before installation in order to ensure placement location is acceptable. Utility organizations should contact the applicable District to discuss their proposal as early as possible).

v. Activities specifically set out in a utility organization's Protocol Agreement (if applicable).

vi. Except for wireless communication equipment, the addition of third-party utility infrastructure to existing permitted utility support structures (e.g. telecommunications cables attached to overhead poles already permitted to BC Hydro).

b) From time to time, the Ministry may update its policies and standards. Unless safety is a concern, permits issued under former Ministry policies

and standards remain valid and do not need to be re-issued. However, if such utility infrastructure is replaced (notwithstanding the offset exception for the replacement of 3-5 sequential overhead power or telecommunication poles specified above) or relocated, the utility infrastructure must meet current Ministry policies and standards and a new permit is required.

c) Utilities not subject to a new or amended permit are still required to abide by all other Ministry policies, standards, and procedures, including the requirement for proper traffic control and work notification (See Chapter 7).

3.2.4 Where New or Amended Permits Cannot Be Issued

a) The Ministry can only issue permits for utilities on land which is legally established as provincial public highway pursuant to the Transportation Act. On highways where the Ministry's tenure is unknown or in question, the Ministry cannot issue new or amended permits.

3.3 Permit Issuance

3.3.1 Permits Are Not Issued to a Utility Organization's Contractor

a) The Ministry will only issue permits in the name of the beneficial owner of the utility infrastructure and will not issue permits in the name of the utility organization's contractor, subcontractor, consultant, or agent.

b) A utility organization's contractor, subcontractor, consultant, or agent may apply for a permit on behalf of the utility organization they represent. A utility organization's contractor, subcontractor, consultant, or agent must include as part of the permit application to the Ministry proof (e.g. an email or letter from the utility organization) which demonstrates that the utility organization has asked them to apply on their behalf.

c) It is expected that from time to time utility organizations may hire contractors to install and maintain permitted infrastructure. Utility organizations are responsible for ensuring that their contractors (as well as any subcontractors) adhere to Ministry policies, standards, and procedures.

3.3.2 Permits are Issued to One Utility Organization Only

a) The Ministry recognizes that some utility organizations have business relationships or agreements to jointly use and own poles, conduits, and other utility infrastructure. However, the Ministry will only issue a permit in the name of a single utility organization, which is ultimately responsible for the permitted utility infrastructure.

3.3.3 The Permitted Utility Organization is Responsible for all Third Parties

a) The Ministry recognizes that some utility organizations have business relationships or agreements allowing third party utilities to occupy and use space on their poles or within their conduits.

b) Unless installing wireless communications equipment, third party utility organizations that have negotiated access to utility infrastructure (e.g. power poles or underground conduits) permitted to another utility organization do not require a separate Ministry permit to occupy and use the space provided by the permit holder.

c) All utility organizations with infrastructure on highway right-of-way have

an obligation to comply with the Ministry's policies, standards, and procedures; however, the utility organization named in the permit is ultimately responsible for any activities carried out by third parties who have negotiated access to that same authorized utility infrastructure.

d) The utility organization named in the permit is ultimately responsible for coordinating with all third parties located on or in its utility infrastructure (e.g. power poles or underground conduits) in the event of a relocation request by the Ministry (see Chapter 14).

3.4 Types of Ministry Authorizations

3.4.1 Site Permits

a) Site permits are used to authorize utility infrastructure where the type and specifications of the works, as well as the location of installations is known and discrete. Site permits are the most common form of permit and can be used to authorize any type of utility infrastructure on highway right-of-way.

b) Site permits apply to utility works that form a contiguous installation. If there is a break in the line, or the authorized works are physically interrupted (such as a pole line moving onto private or municipal property before returning to the highway right-of-way), a new or separate permit is generally required for each segment on highway right-of-way.

3.4.2 Major Utility Project Permits

a) Major utility project permits are intended for utility projects such as a major electrical transmission line or oil/gas transmission pipeline. These projects may cross multiple District boundaries. This form of authorization is meant to reduce administrative burden and is effectively a substitute for multiple Site Permits.

b) Major utility project permits may be used for overhead or underground utility infrastructure where multiple linear segments of the utility infrastructure may need to be installed within and parallel to highway right-of-way and/or where the infrastructure must cross the highway right-of-way at multiple locations. Under this type of authorization, there is usually one permit for the entire utility project. Each specific linear or crossing segment may have site-specific terms and conditions, including by way of appendices or schedules that form part of the authorization.

c) A major utility project permit is not a requirement for large scale utility projects. District staff have the discretion to use this type of permit or instead rely on multiple Site Permits.

d) A major utility project permit is for multiple site-specific segments or locations of the proposed major project and is therefore not the same as a blanket permit (see Chapter 3.4.3).

3.4.3 "Blanket Permits"

a) Commonly referred to as "blanket permits," these are permits authorizing a specific utility organization to construct, operate, and maintain utility infrastructure on certain (usually non-numbered) highways located within a particular District without the need to apply for and receive a Site permit every time. Despite their name, blanket permits are limited in scope and clearly specify the type of utility infrastructure a utility organization is authorized to install.

b) Not all Districts issue blanket permits. The decision to issue a blanket permit is at the sole determination of each District.

c) Blanket permits do not give a utility organization overarching permission to install any kind of utility infrastructure on highway right-of-way other than what has been explicitly approved in the permit document.

d) Utility infrastructure installed under a blanket permit must comply with all applicable Ministry policies and standards, as well as those of industry regulators and other agencies (as applicable). Utility infrastructure that does not meet or comply with the Ministry's policies, standards, and procedures is excluded from the authorization granted by the blanket permit and will require the utility organization to seek a separate site permit (see Chapter 3.4.1).

e) The blanket permit will specifically describe to which highways the permit applies.

f) District Development Services staff shall ensure that blanket permits specifically exclude any highways through a First Nation's reserve lands and shall fulfill the legal duty to consult on any activities that could impact Aboriginal Interests. It is recommended that District Development Services staff contact their Regional Indigenous Relations team for any additional support.

g) Blanket permits are typically issued for a one-year term and remain the document of record for installations in that term and for ongoing operation and maintenance of the installed utility infrastructure. A written request by the utility organization to the District for a new blanket permit is required prior to the end of the term. A utility organization's past performance, as well as its willingness and ability to follow the Ministry's policies, standards, and procedures will help inform the District's decision about whether to issue a new blanket permit. The decision to grant a new blanket permit is solely at the District's discretion.

h) Owing to the fact that a blanket permit will apply to multiple sites and multiple installations, the terms and conditions therein will include language enabling the Ministry, at any time and at its discretion, to treat differently or separately one or more sites covered by the blanket permit.

i) A utility organization with a blanket permit must regularly update the District about all utility infrastructure installed under such permit. The frequency and method of these updates are to be determined by the District and those reporting requirements should be appended to the Permit.

j) A utility organization with a blanket permit must abide by the Ministry's standard works notification and traffic management policies when performing any work on highway right-of-way (see Chapter 7).

k) A blanket permit does not in any way incorporate or alter any other existing permits issued to that same utility organization.

l) At the discretion of the Ministry, Ministry staff and/or its contractors may inspect utility installations or monitor utility construction or maintenance activities to ensure that the highway right-of-way is not put at any undue

risk, and to ensure that utility organizations are adhering to Ministry policies and standards.

3.4.4 Authorizations under a Master Use Agreement

a) The Ministry requires utility organizations to sign a Master Use Agreement before installing wireless communication infrastructure and equipment on highway right-of-way (see Chapter 21), or fibre optic cables within Ministry-owned conduit (see Chapter 22).

b) A Master Use Agreement in conjunction with a site permit issued by District staff forms the complete authorization for these specific installations.

c) Master Use Agreements are generally valid for a defined period (usually 10 or 20 years) with options to renew. If a Master Use Agreement expires and is not renewed, any permits issued under such Master Use Agreement are no longer valid. The terms of the Master Use Agreement will govern what happens to any affected utility infrastructure in this scenario.

d) The Senior Project Manager, Utilities Services is responsible for developing, issuing, and administering Master Use Agreements.

3.4.5 Other forms of Authorizations

a) Permits are the only acceptable form of authorization for utility infrastructure on highway right-of-way. The Ministry does not issue Licenses of Occupation for utility infrastructure on highway-right-of-way. See chapter 4.1.4 for more information on utilities occupying titled land held by British Columbia Transportation Financing Authority (BCTFA).

3.5 Applying for Permits

a) The Ministry encourages all utility organizations to apply for permits online via the Ministry's website: https://www.th.gov.bc.ca/permits/Apply.asp.

b) Any questions about the permit application process should be directed to the relevant District office. District contact information is in Appendix A.

4. PROPERTIES AND LAND MANAGEMENT

References

Legislation:

- Transportation Act

Documents and other Sources:

- Property Acquisition Standard and Procedures Manual (not viewable externally)
- Protocol Agreements (not viewable externally)

4.1 Properties and Land Management

4.1.1 Interest in Highway Right-of-Way Lands

a) Permits issued by the Ministry for the installation of utility infrastructure on highway right-of-way do not afford utility organizations any right, title or interest in the highway right-of-way lands.

4.1.2 Highway Right-of-Way Acquisition for Ministry Projects

a) When relocating utility infrastructure as part of a highway expansion or improvement project, it is preferential to relocate such utility infrastructure to other suitable locations within existing highway right-of-way. Where this cannot be achieved, the Ministry may choose to acquire additional lands which shall become highway right-of-way.

b) The decision to acquire lands for relocated utility infrastructure as noted in (a) is solely at the discretion of the Ministry.

c) The acquisition of additional lands to accommodate relocated utility infrastructure must be necessitated by a highway expansion or improvement project, and there must be clear net benefit to the public interest in making the additional acquisition.

d) The Ministry will not acquire additional lands to accommodate utility infrastructure in circumstances other than a relocation necessitated by a highway construction or improvement project.

e) If a Protocol Agreement exists between the Ministry and a utility organization, the Protocol Agreement may have additional requirements and should be referred to for more policies and procedures.

4.1.3 Utilities Impacted by the Disposal of Highway Right-of-Way

a) The Ministry may dispose of highway right-of-way if the Ministry determines, in its sole discretion, that certain highway rights-of-way are no longer required for provincial highway purposes.

b) The Ministry will make reasonable efforts to ensure that utility organizations with affected utility infrastructure are aware of pending disposals and that they have an opportunity to make alternative accommodation arrangements for their utility infrastructure.

c) The Ministry provides no guarantees, assurances, or compensation to utility organizations when there is a disposal of highway right-of-way and utility infrastructure can no longer be accommodated on highway right-of-way.

d) Additional considerations may be required where the right-of-way lands being disposed of involves or affects Aboriginal rights or interests.

e) If a Protocol Agreement exists between the Ministry and a utility organization, the Protocol Agreement may have additional requirements and should be referred to for more policies and procedures.

4.1.4 Utility Use and Occupation of BCTFA Lands

a) Titled land held by British Columbia Transportation Financing Authority (BCTFA) is not highway right-of-way. Utility organizations wishing to install utility infrastructure on BCTFA titled lands must apply to the Ministry's Properties and Land Management Branch for a License of Occupation. Alternatively, utility organizations may negotiate a Statutory Right of Way with the Ministry's Properties and Land Management Branch.

4.1.5 Utilities on Roads that have not been Established as Highway Right-of-Way

a) For more information on these types of roads, Ministry staff should consult the Property Acquisition Standards and Procedures Manual, or contact the applicable Regional Manager, Property Services.

4.1.6 Extinguishment of Easements and Statutory Rights-of-Way

a) Where a utility organization holds an easement or statutory right-of-way on Crown land or private lands which are required for provincial highway purposes, the utility organization shall extinguish that portion of the easement or statutory right-of-way in favour of the Province as per any applicable agreements, permits, legislation, or other documents.

b) Any costs or compensation associated with the extinguishment of easements or statutory rights-of-way shall be as per any applicable agreements, permits, legislation, or other documents.

5. FIRST NATIONS CONSULTATION

References

- Guide to Involving Proponents When Consulting First Nations
- Protocol Agreements (not viewable externally)
- Province of British Columbia Consultation Guide (C-guide)
- Updated Procedures for Meeting Legal Obligations When Consulting First Nations

5.1 Consultation Overview

5.1.1 Provincial Duty to Consult

a) The Province of British Columbia has a legal duty to consult, and where required, accommodate First Nations whenever a decision or activity could impact Aboriginal Interests, which includes treaty rights or asserted or established Aboriginal rights and title.

b) The duty to consult is triggered whenever these Aboriginal Interests may be impacted by a potential Crown action or authorization. Utility installations can impact Aboriginal Interests anytime ground is disturbed or vegetation is removed.

5.1.2 Consultation in Practice

a) Development Services staff and other Ministry employees with authority to make decisions about Provincial land or resources that can impact Aboriginal Interests are responsible for ensuring that the consultation and accommodation record is complete and that such consultation and any accommodation are appropriate for the circumstances. For further guidance about the consultation process or support, Ministry staff should contact their Regional Indigenous Relations team.

b) For any proposed utility installations that are within a highway right-of-way through or near a First Nation's reserve, it is recommended that the District Development Services Staff (or other Ministry staff as the situation may warrant) contact their Regional Indigenous Relations team.

5.2 General Overview of Consultation Process for Permits

Note: The processes outlined in the sections below are not exhaustive. Unless otherwise specified, Ministry staff and utility organizations should follow the Province's Consultation Guide (C-guide), including the Updated Procedures for Meeting Legal Obligations When Consulting First Nations and Guide to Involving Proponents When Consulting First Nations. Ministry staff may also seek advice from the applicable Regional Indigenous Relations team.

5.2.1 District Decides Who Will Perform Consultation

a) Upon receipt of an application to install utility infrastructure on highway right-of-way, District Development Services Staff shall decide whether the District will perform consultation with First Nations or instead assign the "procedural aspects" of consultation to the utility organization.

b) Procedural aspects refers to the direct engagement component of consultation that involves sharing and discussing information.

As per the Guide to Involving Proponents When Consulting First Nations, procedural aspects more specifically includes:

i. Providing information about the proposed project to First Nations early in the planning process;

ii. Obtaining and discussing information about specific Aboriginal Interests that may be impacted with First Nations;

iii. Considering modifications of plans to avoid or mitigate impacts to Aboriginal Interests; and

iv. Documenting engagement, specific Aboriginal Interests that may be impacted, and any modifications to address concerns and providing this record to the Crown decision maker.

5.2.2 District Performs Consultation Itself

a) The District may decide that there are benefits to performing consultation itself. If the District decides to perform consultation, District staff will perform the procedural aspects outlined in the (C-guide) and in the Updated Procedures for Meeting Legal Obligations When Consulting First Nations and complete the process prior to the issuance of any authorization or commencement of utility work.

b) Once the consultation process and a record of consultation are complete, the District will decide whether to issue a permit based on the outcome of consultation. If the application is approved, District Development Services staff may include in the permit any special conditions that may be required to address any Aboriginal Interests identified during the consultation process.

5.2.3 District Assigns Consultation to the Applicant

a) The District may assign the procedural aspects of consultation to the proponent. If the proponent has not already proceeded to engage with the impacted First Nation(s), the District may advise the First Nation(s) that the Ministry has delegated the procedural aspects of consultation and that the proponent will be engaging with them.

b) The applicant then performs consultation and submits a record of consultation to the District. The Ministry may provide additional information and support during the consultation process as the case may warrant.

c) The District's decision on the utility permit application will be based on the consultation record.

d) The District will not decide on the utility permit application until it receives and reviews the consultation record.

5.2.4 If the Utility Organization has Already Performed Consultation

a) If the utility organization has already undertaken consultation with the applicable First Nations, records of such consultation may be submitted to and reviewed by the District. Additional consultation may still be required. For any additional support, Ministry staff should consult their Regional Indigenous Relations team.

5.3 Consultation Process for Ministry Projects

a) Ministry projects often involve the installation or relocation of utility infrastructure which may impact Aboriginal Interests. When consultation is required refer to the C-Guide and the Updated Procedures for meeting Legal Obligations When Consulting First Nations.

b) If a Protocol Agreement exists between the Ministry and a utility organization, the Protocol Agreement may have additional requirements and should be referred to for more policies and procedures.

6. ENVIRONMENTAL MANAGEMENT

References

Legislation:

- Environmental Management Act
- Heritage Conservation Act
- Integrated Pest Management Act
- Water Sustainability Act
- Weed Control Act
- Wildlife Act

Other Documents and Sources:

- Best Practices for Managing Invasive Plants on Roadsides Manual
- Environmental Best Practices for Highway Maintenance Activities Manual
- Standard Specifications for Highway Construction
- Occupant License to Cut Information – Ministry of Forests, Lands, Natural Resource Operations and Rural Development
- Technical Circular T-04/13 – Evaluating the Potential for Acid Rock Drainage and Metal Leaching at Quarries, Rock Cut Sites and From Stockpiled Rock or Talus Material Used by the MOTI
- Technical Circular T-08/09 – Use of Herbicides for Invasive Plant Control
- Technical Guidance on Contaminated Sites 1: Site Characterization and confirmation Testing (TG1) - Ministry of Environment

6.1 Approvals and Construction Environmental Management Plans

a) Utility organizations are responsible for obtaining all environmental permits and approvals from other agencies (as required) for the installation, operation, and maintenance of utility infrastructure on highway right-of-way.

b) Utility organizations shall follow Section 165 of the Standard Specifications for Highway Construction.

c) Where utility work is being performed, and environmental values that require special consideration are identified in or adjacent to the work site, utility organizations must follow a Construction Environmental Management Plan (CEMP) prepared and/or signed and accepted by an Appropriately Qualified Professional (AQP). Note: environmental values may include, but are not necessarily limited to, the following: sensitive habitats, watercourses, invasive plants, species at risk, wildlife, etc.). It is the responsibility of the Utility organization to conduct a review (which may include a desktop review, field-based assessments, and/or advice from an AQP) of the proposed work site to determine the presence/absence of environmental values in advance of any work.

d) "Environmentally Sensitive Areas" (ESAs) shall mean area(s) requiring special management and attention to protect resources, habitat or species (which includes and is not limited to watercourses, designated sensitive areas and rare and endangered ecosystems, fish and fish habitat, vegetated areas containing rare and endangered flora/fauna, vulnerable aquifers and archaeological, heritage and cultural resources).

6.2 Vegetation Management

6.2.1 Invasive Plant Management

a) All activities by a utility organization on highway right-of-way must be completed in a way that will not contribute to the introduction or spread of invasive plants.

b) Invasive plants are broadly defined as species that are not native to British Columbia, or are outside of their natural distribution, and which can negatively impact the environment, people, or the economy. The term invasive plant includes designated noxious weeds noted in the Weed Control Act and associated regulations.

c) Invasive knotweed sites, including the soil within 15 m of the knotweed, should not be disturbed without prior direction and authorization from the Ministry.

d) To help control the introduction or spread of invasive plants, utility organizations must ensure:

   i. Ground and soil disturbance is minimized at all times;

   ii. Machinery and equipment used on highway right-of-way is clean and free of invasive plants;

   iii. All soil or gravel material introduced onto highway right-of-way comes from a clean source free of invasive plants;

   iv. Follow the Best Practices for Managing Invasive Plants on Roadsides manual; and

   v. Ensure all disturbance areas are seeded as soon as possible following the disturbance to the standards set out in Section 757 of the Standard Specifications for Highway Construction.

6.2.2 Herbicide Use Restriction

a) In accordance with Technical Circular T-08/09, the use of herbicides for all Ministry vegetation management programs on highway right-of-way is limited to the control of invasive plants only. As such, utility organizations are not permitted to use herbicides on highway right-of-way other than for the control of invasive plants.

b) Where a utility organization requires the use of herbicides for invasive plant management on highway right-of-way, the utility organization must receive prior written permission from the Ministry's Environmental Services group. Herbicides must be applied by a certified applicator.

6.2.3 Harvesting of Crown Timber on Highway Right-of-Way

a) Trees located on highway right-of-way are a Crown asset. As such, permission from the Ministry of Forests, Lands, Natural Resource Operations and Rural Development is required to cut and remove Crown timber from highway right-of-way.

b) A utility organization that has obtained an authorization from the Ministry of Transportation and Infrastructure to install utility infrastructure within highway right-of-way must also separately obtain an Occupant Licence to Cut (or other licenses and permissions, as applicable) if Crown timber needs to be cut and removed from highway right-of-way. For more information, including how to apply for a license, utility organizations should contact the Ministry of Forests, Lands, Natural Resource Operations & Rural Development.

c) Merchantable Crown timber shall be cold decked and loaded from approved access locations. Merchantable Crown timber shall not be loaded from the traveled roadway or road shoulder.

d) After removing Crown timber, utility organizations must ensure that the highway right-of-way is left in a neat and orderly condition. This includes ensuring that:

   i. All debris is chipped and removed from the highway right-of-way; and,

   ii. Stumps are cut off to avoid leaving sharp points and at a level that would permit grass mowing and other standard highway right-of-way maintenance activities.

6.3 Highway Right-of-Way Preservation

6.3.1 Erosion and Drainage Control

a) All utility infrastructure shall be installed and maintained in a manner that avoids or mitigates erosion and sedimentation.

b) All utility infrastructure shall be installed and maintained in a manner that does not interfere with highway drainage systems.

c) All utility infrastructure shall be installed and maintained in a manner that avoids the discharge of deleterious substances into highway drainage systems or other watercourses.

6.3.2 Wildlife Exclusion Systems

a) On new freeways and expressways where large species of wildlife (e.g. deer, elk, and moose) pose a potential hazard for drivers, the Ministry designs and constructs wildlife exclusion systems. Wildlife exclusion systems are designed using several components, including:

   i. Wildlife exclusion fencing;

   ii. One-way gates and jumpouts;

   iii. Ungulate guards; and

   iv. Overpasses and underpasses.

b) Utility organizations must not damage, remove, or otherwise compromise the effectiveness of the Ministry's wildlife exclusion systems. Where an impact cannot be avoided, prior approval from the Ministry is required.

6.4 Contaminated Environmental Media

a) The characterization or testing of environmental media (e.g. soil, groundwater, etc.) is not to be performed by a utility organization working on highway right-of-way unless there is a demonstrated concern for worker safety (e.g. strong petroleum hydrocarbon odours).

b) The Senior Geoscientist in Ministry Headquarters in Victoria must be contacted before any characterization of soil or testing of other environmental media. The utility organization will be required to secure a qualified environmental professional (QEP) to perform such work. The QEP may be tasked with characterizing soil in general accordance with the BC Ministry of Environment Technical Guidance on Contaminated Sites 1: Site Characterization and confirmation Testing (TG1).

c) If the utility work involves drilling, trenching or digging into rock, the Ministry Technical Circular T-04/13 must be observed regarding acid rock drainage and metal leaching.

d) If the soil or other environmental media is determined to be contaminated, the QEP must submit/secure the required permits, notices, reports, agreements and summaries (etc.) associated with any on-site handling, treatment and/or off-site transport, disposal (etc.) of the impacted environmental media pursuant to the Contaminated Sites and Hazardous Waste Regulations of the Environmental Management Act (e.g. Notice of Independent Remediation, Contaminated Soil Relocation Agreement, Site Risk Classification Report, etc.). The utility organization will be responsible for all or some of the costs associated with this work performed with approval from a Ministry representative.

7. TRAFFIC MANAGEMENT AND WORK NOTIFICATION

References

- Traffic Management Manual for Work on Roadways
- Work Notification/Lane Closure Request and Approval (H1080 form)

7.1 Traffic Management and Control

a) All utility organizations and/or their contractors performing utility work (e.g. initial installation or maintenance work) and responding to incidents shall control road users, drivers, pedestrians, cyclists and those with disabilities, and provide them with the information and guidance they need to successfully traverse the work zone.

b) All utility organizations and/or their contractors working on highway right-of-way must follow the Ministry's traffic management policies, standards and procedures set out in the most recent edition of the Ministry's Traffic Management Manual for Work on Roadways (TMM). This is usually stated as a standard clause in utility permits. For major highway construction projects involving utilities and major utility installations the TMM may be further supplemented by special provisions specifically developed for these larger scale undertakings.

7.2 Work Notification and Lane Closures

a) Utility organizations and/or their contractors must notify the Ministry of any work being conducted on highway right-of-way, including work authorized under an existing permit. This shall be done by submitting a Work Notification/Lane Closure Request and Approval form (H1080 form) to the local District office at least ten (10) working days prior to the start of work.

b) Utility organizations and/or their contractors must request and receive written permission from the Ministry prior to closing any lanes or shoulders. This shall be done by submitting a Work Notification/Lane Closure Request and Approval form (H1080 form) to the local District office at least ten (10) working days prior to the start of work.

c) Please note that a Work Notification/Lane Closure Request and Approval form (H1080 form) is NOT the same as a permit as described in Chapter 3. Permits authorize the installation, operation, and maintenance of utility infrastructure within highway right-of-way. Separate notification and approvals must be obtained by utility organizations and/or their contractors to work on highway right-of-way.

d) The Ministry may limit the hours during which a utility organization may perform work in order to maintain an acceptable standard of highway safety and traffic flow.

7.3 Traffic Control During an Emergency

a) Utility organizations or their contractors responding to an emergency must establish appropriate traffic control when impacting highway operations as outlined in the TMM after ensuring their own safety and the safety of others from dangers caused by the emergency.

8. HIGHWAY ACCESS

References

- B.C. Supplement to TAC Geometric Design Guide (Section 700)
- Permits and Approvals Manual

8.1 Highway Accesses and Permits

a) Highway access road permits are mandatory for any type of development or utility work that requires an access road connecting to highways under the Ministry's jurisdiction. Points of access to Ministry highways are controlled due to traffic volume and speed and must be carefully considered with respect to the functionality of the highway. As such, a highway access permit is required for all access roads except single residential driveways on side roads.

b) A highway access permit is not the same as a permit to install, operate, and maintain utility infrastructure on highway right-of-way as described in Chapter 3. If needing to install an access road, utility organizations must separately receive a highway access permit from the applicable District.

c) The construction of accesses on freeways and expressways is generally prohibited, and stringent requirements apply to other controlled access highways.

d) An access can be temporary or permanent.

e) All approved accesses shall comply with Section 700 of the B.C. Supplement to TAC Geometric Design Guide.

f) More information on accesses, including instructions on how to apply for an access permit, is available in the Ministry's Permits and Approvals Manual.

9. UTILITY LOCATES

References

- BC One Call
- Dig Shaw
- Protocol Agreements (not viewable externally)

9.1 Utility Locates

a) The Ministry encourages all utility organizations installing underground utility works on highway right-of-way to register with BC One Call. Some utility organizations may be required to register with BC One Call as per provincial and/or federal legislation.

b) Should the Ministry or its contractors require locates of underground utility infrastructure within highway right-of-way, the Ministry and its contractors shall follow the BC One Call process, or other processes for utility organizations who are not members of BC One Call (e.g. the Dig Shaw process for underground Shaw communications infrastructure).

c) If required, utility organizations are expected to provide additional locate support in a timely manner to the Ministry or its contractors and at no cost to the Ministry or its contractors.

d) Utility organizations shall mark the location of all underground utility infrastructure pursuant to the colour code developed by the American Public Works Association, and which is subsequently endorsed by the Canadian Standards Association. These colours are related to specific types of underground utilities as follows:

Colour	Type of Utility
	Red – Electric power lines, cables, conduits and lighting cables
	Yellow – Gas, oil, steam, petroleum or gaseous materials
	Orange – Communication, alarm or signal lines, cables or conduits
	Blue – Potable water
	Green – Sewers and drain lines
	Pink – Temporary survey markings
	Purple – Reclaimed water, irrigation and slurry lines
	White – Proposed excavation

e) If a Protocol Agreement exists between the Ministry and a utility organization, the Protocol Agreement may have additional requirements and should be referred to for more policies and procedures.

10. PRIME CONTRACTOR

References

Legislation:

- Workers Compensation Act

Other Sources and Documents:

- Standard Specifications for Highway Construction

10.1 Prime Contractor

10.1.1 Utility Organization as the Prime Contractor during Utility-initiated Work

a) Under Section 118 of the Worker's Compensation Act, the Prime Contractor is responsible for the coordination of safety at the worksite.

b) As a condition set out in the Ministry-issued permit to install, operate, and maintain utility infrastructure on highway right-of-way, the utility organization named in the permit unconditionally agrees with the Ministry of Transportation and Infrastructure that the permittee is the Prime Contractor or will appoint a qualified prime contractor, as described in Section 118 of the Workers Compensation Act, for the purposes of the work described by the permit.

10.1.2 Ministry-Initiated Projects and Prime Contractors

a) During Ministry-initiated highway improvement projects, the Ministry's contractor will be the Prime Contractor.

b) If utility work (such as relocations) occurs within the Prime Contractor's Area of Responsibility (as defined in Section 135 of the Ministry's Standard Specifications for Highway Construction), the utility organization and/or the utility organization's contractor(s) will be responsible for coordinating their work activities with the Prime Contractor.

c) Notwithstanding the above, the Ministry may designate one or more Areas of Responsibility, each with a single Prime Contractor. The Ministry may, in its sole discretion, appoint in writing a party—including a utility organization or its contractor—to be the Prime Contractor for one or more Areas of Responsibility.

d) The Ministry may at any time, in its sole discretion and in writing, change or revoke any appointment of the Prime Contractor or designation of an Area of Responsibility.

e) Any Prime Contractor designation or appointment must be in writing and will include:

   i. A description of the geographic Area of Responsibility; and

   ii. The time and date that the designation or appointment comes into effect.

f) The information in this chapter is not exhaustive. For more information on Prime Contractor and construction site safety, please consult Section 135 of the Ministry's Standard Specifications for Highway Construction.

11. ENGINEER OF RECORD

References

Legislation:

- Engineers and Geoscientists Act

Other Documents and Sources:

- Technical Circular T-06/09 - Engineer of Record and Field Review Guidelines

11.1 Engineer of Record Requirements

a) Any works within highway right-of-way that fall within the scope of "engineering" under the Engineers and Geoscientists Act will be performed by a Professional Engineer, and shall comply with Technical Circular T-06/09 - Engineer of Record and Field Review Guidelines.

b) The Engineer of Record is responsible to ascertain that the final design (including any changes made during construction) meets applicable design standards, criteria and guidelines.

12. RECORD DRAWINGS

References

- Protocol Agreements (not viewable externally)

12.1 Record Drawings

a) Utility organizations are responsible for producing and maintaining accurate record drawings for utility infrastructure installed within highway right-of-way. Record drawings are also commonly referred to as "as-built drawings."

b) Utility organizations must provide record drawings to the Ministry upon request for utility infrastructure installed within highway right-of-way.

c) Utility organizations must provide record drawings for utility infrastructure installed within highway right-of-way in a format acceptable two the Ministry and at no cost to the Ministry.

d) If a Protocol Agreement exists between the Ministry and a utility organization, the Protocol Agreement may have additional requirements and should be referred to for more policies and procedures.

13. INTENTIONALLY LEFT BLANK

This chapter is intentionally left blank to allow for future modifications to this manual.

14. MINISTRY-INITIATED WORKS (UTILITY RELOCATIONS)

References

- Contract Administration Manual (not viewable externally)
- Project Management Manual (not viewable externally)
- Protocol Agreements (not viewable externally)

14.1 Project Delivery

14.1.1 Ministry Project Delivery Overview

a) The Ministry undertakes highway rehabilitation, expansion, and improvement projects which often impact and necessitate the relocation of utility infrastructure. Rehabilitation projects are usually minor betterments meant to extend the life of existing highway assets, whereas expansion and improvement projects improve safety and add to the capacity of the highway network to meet growing traffic volumes and demand. Depending on its size and scope, a Ministry project may be initiated and managed by a District, Region or as a major project under the direction of the Major Projects, Infrastructure, and Properties Department.

b) Each Ministry project is managed by a project manager (usually a Ministry employee but the project manager may also be a contracted consultant) who is responsible for overseeing the work and managing project work within approved scope, schedule, and budget. The project manager and his/her project team also ensure that utility coordination and relocation work is handled within the same project management structure as the overall highway construction project.

c) The Ministry undertakes highway projects using one of several procurement methodologies (see chapter 14.2). The chosen procurement methodology may impact the level and complexity of coordination required by utility organizations with infrastructure affected by the project.

d) The information in this chapter is general in scope. For more information on project management, Ministry staff should consult the Ministry's Project Management Manual. Section 4.5 of the Project Management Manual contains information related to utility relocations.

14.1.2 Importance of Communication and Coordination

a) Ministry projects involving the relocation of utility infrastructure can be challenging for both the Ministry and utility organizations alike. Early notification and engagement, combined with ongoing communication and coordination between the Ministry project team and utility organizations, is essential.

b) Even small highway projects can become delayed or face forced revisions if utility conflicts are not identified early in the project's life. Among other benefits, early and ongoing communication and coordination will help:

i. Maximize efficiencies and reduce redundant efforts by all parties;

ii. Reduce delays to Ministry projects; and

iii. Reduce overall costs for both the Ministry and utility organizations.

14.2 Ministry Project Procurement Models

14.2.1 General Information

a) Ministry highway projects vary greatly in scale and complexity, and the project procurement model is selected commensurately. Each procurement model has its own unique advantages. Under all procurement models the Ministry is and/or remains the owner of the highway or structure.

b) Common procurement models employed by the Ministry are described at a high-level below. For more information on these procurement models, Ministry staff should consult the Ministry's Project Management Manual.

14.2.2 Day Labour

a) In Day Labour, the Ministry takes on the roles and responsibilities of a contractor to deliver the work through hired equipment. This model is most commonly used for short term construction projects where immediate work is required. This model is also used in emergency situations when immediate action is required.

14.2.3 Design-Bid-Build

a) In Design-Bid-Build (DBB), the Ministry obtains the design for the highway infrastructure separately from construction. The design may be procured and completed by contracted resources or be completed internally by Ministry staff. In either case, the completed design forms the core of the overall tender package. After a bid process, a construction contractor then builds the design for the Ministry. Most Ministry-initiated projects, especially those delivered at the Regional level, follow the DBB procurement methodology.

14.2.4 Design-Build

a) In Design-Build (DB), the Ministry contracts a single entity to both design and construct the highway infrastructure to meet the requirements of a reference plan provided by the Ministry.

14.2.5 Design-Build-Finance-Operate and Public-Private Partnership

a) Design-Build-Finance-Operate (DBFO) is a procurement methodology similar to Design-Build, but which may have additional requirements for the contractor such as financing the capital construction costs and/or responsibility for the operation and maintenance (and possibly rehabilitation) of the finished asset for a set period of time after completion.

b) Similar to Design-Build-Finance-Operate, a Public-Private Partnership (P3) is an arrangement between two or more public or private entities for cost-sharing and delivery of the project.

14.3 Utility Relocation Responsibilities

14.3.1 Ministry Responsibilities

a) Regardless of the project procurement methodology, the Ministry project team shall identify and notify in writing all utility organizations impacted (or potentially impacted) by the Ministry's project as early as possible.

b) As part of the notification process, the Ministry project team shall provide impacted utility organizations with as much relevant information about the project as possible/available. Such information may include:
   i. Scope and description of the Ministry project;
   ii. Location and limits of the Ministry project;
   iii. Preliminary drawings or designs;
   iv. Utility conflict matrixes;
   v. High level schedule for the start and completion of construction (if known);
   vi. Invitation(s) to any planned coordination meetings; and/or
   vii. Name and contact information of the person on the Ministry project team responsible for utility coordination and relocation.

c) The Ministry project team shall regularly communicate and coordinate with utility organizations during all project phases so that utility organizations can assess impacts to existing infrastructure, design relocated infrastructure, and effectively schedule the time and resources to meet agreed-to relocation schedules. Communication between the Ministry and utility organizations must scale with the size and complexity of the project. Larger, more complex projects will require increased communication and coordination.

d) Any compensation provided by the Ministry for utility infrastructure relocations shall be in accordance with Chapter 15.

e) The Ministry shall issue new permits (see Chapter 3) for relocated utility infrastructure on highway right-of-way. Relocated utility infrastructure must meet current Ministry policies and standards. The Ministry project team shall ensure that District Development Services staff have all relevant information and documentation required to issue a new permit for the relocated utility infrastructure. It is recommended that the Ministry project team coordinate with District Development Services staff early in the project process.

f) The Ministry shall inform utility organizations as soon as possible of any project scope, schedule, or design changes that may impact the relocation of utility infrastructure.

g) If a Protocol Agreement exists between the Ministry and a utility organization, the Protocol Agreement may have additional requirements and should be referred to for more policies and procedures.

14.3.2 Responsibilities of Utility Organizations

For all Ministry projects, utility organizations:

a) Shall identify and provide information about existing utility infrastructure within the Ministry project area upon request by the Ministry project team. Such information may include existing or previous permits, existing or previous agreements, record drawings, etc.

b) Shall provide to the Ministry project team the contact information for staff working on all phases of the utility infrastructure relocation, including for design and construction. Where possible, it is preferable that utility organizations designate a single contact person for the entire relocation project.

c) Shall review and comment on highway design plans, participate in the highway design process, and attend design and preconstruction meetings (and any other related meetings), all as required/requested by the Ministry project team and/or the Ministry's contractor.

d) Shall coordinate their relocation plans with the Ministry project team and/or the Ministry's construction contractor on a schedule that is mutually agreeable and beneficial to both parties.

e) Shall notify the Ministry project team of any planned utility infrastructure upgrades or other work planned during the relocation project.

f) Shall notify the Ministry project team of any abandoned utility infrastructure within the project area, or plans to abandon any existing utility infrastructure.

g) Shall inform the Ministry project team as soon as possible of lead times and any constraints or dependencies for relocating utility infrastructure, such as required permits or approvals from other agencies, service blackout periods, regulatory requirements, property needs, minimum safety clearances, etc. Utility organizations are responsible for ensuring they have any required approvals from other agencies.

h) Shall communicate and coordinate with all third party utilities physically located on or in their infrastructure to ensure that design requirements and relocation schedules are met.

i) During construction, shall ensure they (along with any contractors or subcontractors) are in compliance with the Prime Contractor's construction zone safety requirements (see Chapter 10).

j) Shall establish or follow project traffic management plans during all utility relocation activities.

k) If a Protocol Agreement exists between the Ministry and a utility organization, the Protocol Agreement may have additional requirements and should be referred to for more policies and procedures.

14.3.3 Shared Responsibilities

a) The Ministry project team and utility organizations shall regularly coordinate and communicate in a timely manner during all phases of the Ministry project from initiation through to completion.

b) The Ministry project team and utility organizations shall make available the required and sufficient resources for all phases of the Ministry project.

c) The Ministry project team and utility organizations shall each immediately inform the other party of any unforeseen challenges and/or changes to schedule or designs that may impact the other party.

d) The Ministry and utility organizations will work together to expeditiously resolve any conflicts or disputes that arise during the project in a professional and timely manner.

14.4 Utility Coordination Best Practices

14.4.1 Utility Relocation Planning and Coordination

a) Utility coordination best practices are intended as considerations for the Ministry project team and utility organizations as means to increase project efficiencies, decrease costs, and minimize service disruptions to the traveling public and utility customers alike.

b) The Ministry project team should identify all utility organizations within the project area that will (or may) be impacted by the Ministry project as early as possible. This can be accomplished through various means, such as:

   i. Reviewing existing Ministry permit records;
   ii. Liaising with regional utility contacts;
   iii. Reviewing any available utility record drawings;
   iv. Utilizing the data and resources available through the BC One Call process; and/or
   v. Conducting site visits with utility organization representatives to ensure all utility infrastructure is accurately identified.

c) If possible, relocate utility infrastructure before commencement of highway construction activities.

d) If possible, every effort should be made to avoid interim moves of utility infrastructure.

e) It may be beneficial for similar utilities (e.g. telecommunications) to relocate in joint-trenches.

f) Utility organizations with permitted infrastructure (e.g. poles or underground conduit) on highway right-of-way are ultimately responsible for coordinating with any third-party utilities attached to or located in that same infrastructure. Nevertheless, the Ministry project team may wish to notify all utility organizations directly to ensure they are aware of the need to relocate.

g) Where possible or practical, avoid relocations altogether by designing and constructing highway improvements in such a way as to leave existing utility infrastructure in place.

14.5 Relocation Authorization

14.5.1 No Upfront Payments

a) When the Ministry does provide compensation for the relocation of utility infrastructure, the Ministry pays only upon the completion of the relocation work. The Ministry will not issue any upfront payments or deposits for utility relocations. For very large and costly utility relocations, however, progress payments may be an option by mutual agreement.

b) In lieu of upfront payments or deposits, the Ministry will issue a Letter of Authority (see Chapter 14.5.2) or a Letter of Agreement outlining compensation and authorizing the utility organization to proceed with the relocation work.

14.5.2 Letter of Authority

a) A Letter of Authority is typically used to authorize work to be performed by a utility organization in accordance with a previous agreement or memorandum of understanding (e.g. Protocol Agreement).
The document is in writing and formally establishes:

   i. Approval for the utility organization to proceed with the relocation; and
   ii. The maximum amount of compensation the Ministry will pay to the utility organization, and the Ministry's commitment to pay upon completion of the works.

b) The Letter of Authority must be signed by a Ministry official delegated as the expense authority. This person must be a government employee.

c) For more information on Letters of Authority, Ministry staff may consult the Ministry's Contract Administration Manual.

14.5.3 Permit Authorization for Relocated Utility Infrastructure

a) All relocated utility infrastructure requires a new authorization in the form of a written permit (see Chapter 3).

b) The Ministry project team must coordinate with Development Services staff in the relevant District to ensure proper permitting for the relocated utility infrastructure.

14.5.4 Other Documents

a) If a Protocol Agreement exists between the Ministry and a utility organization, the Protocol Agreement may have additional requirements and should be referred to for more policies and procedures.

b) If a Master Use Agreement exists between the Ministry and a utility organization, the Master Use Agreement may have additional requirements and should be referred to for more policies and procedures.

15. UTILITY FEES AND COMPENSATION

References:

Legislation:

- Transportation Act
- Utilities Commission Act
- Oil and Gas Activities Act
  - Pipeline Crossings Regulation
- National Energy Board Act

Other Documents and Sources:

- Master Use Agreements (fibre optics) (not viewable externally)
- Master Use Agreements (wireless communications) (not viewable externally)
- Protocol Agreements (not viewable externally)

15.1 Utility Fees

15.1.1 Administrative Fees

a) An administrative fee is a fee to recoup the Ministry's direct and causal costs such as for permit administration, permit application and plan reviews, site inspections, etc. The Ministry does not charge utility organizations an administrative fee to apply for use of highway right-of-way.

b) Although the Ministry does not charge an administrative fee, section 62(3)(d) of the Transportation Act allows for the future enactment of a fee.

15.1.2 General Use Fee

a) A general use fee is a fee charged to utility organizations to install, maintain, and operate utility infrastructure within highway right-of-way. A general use fee is an ongoing fee for the occupation and use of the highway. The Ministry does not charge utility organizations a general use fee for use of the highway right-of-way.

b) Although the Ministry does not charge a general use fee, section 62(3)(d) of the Transportation Act allows for the future enactment of a fee "in an amount approved by the Lieutenant Governor in Council."

15.1.3 Fees for Authorizations Issued in the Nature of a License

a) Section 62(3)(d) of the Transportation Act allows the Ministry to charge and collect a fee for utility infrastructure on highway right-of-way if the authorization is "in the nature of a license." In this case, the ministry must not charge less than market rate for such a license.

b) Authorizations for wireless communication sites on highway right-of-way (see Chapter 21) and fibre optic cable in Ministry-owned conduit (see Chapter 22) are issued under a Master Use Agreement, which are "in the nature of a license." Authorizations for other types of utility infrastructure are not in the nature of a license and are therefore not subject to such fees.

c) Utilities Services in Ministry headquarters is responsible for the administration and collection of wireless and fibre optic fees.

15.2 Compensation for Ministry-Initiated Relocations of Utility Infrastructure

15.2.1 General Policies of Compensation

a) As a general policy, the Ministry does not compensate utility organizations for relocating permitted utility infrastructure existing within highway right-of-way in order to accommodate highway improvement projects or other Ministry-initiated work.

b) Despite (a), the Ministry compensates certain utility organizations as per various agreements (see chapter 15.2.2), legislation, and/or specific policies for the relocation of utility infrastructure in order to accommodate highway improvement projects.

c) Notwithstanding any applicable agreements, where the Ministry provides compensation for utilities currently permitted on highway right-of-way, and where the utility infrastructure is jointly-owned by two or more utility organizations, any compensation shall be paid to the single utility organization named in the Ministry-issued authorization only.

d) The Ministry does not provide compensation to any utility organization for any lost revenues or for other business losses incurred because of a required relocation for highway improvement projects.

15.2.2 Compensation for Utility Organizations with a Protocol Agreement

a) The Ministry has entered into Protocol Agreements with three utility organizations: BC Hydro, West Kootenay Power (now FortisBC), and BC TEL (now Telus).

b) The Ministry provides compensation to these utility organizations in accordance with their respective Protocol Agreements (link not viewable externally).

c) The Utilities Services group in Ministry headquarters is responsible for the administration of these Protocol Agreements and should be contacted for any questions regarding application or interpretation.

15.2.3 Compensation for Provincially Regulated Gas Utilities

a) Provincially regulated gas utilities are:

   i. Regulated by the British Columbia Utilities Commission per the Utilities Commission Act and associated regulations;

   ii. Located entirely within British Columbia; and

   iii. Operate at pressures less than 700 kPa.

b) Unless the clauses of the Ministry-issued permit explicitly state otherwise, the Ministry does not provide compensation for the relocation of natural gas utilities permitted within highway right-of-way.

c) The Ministry provides compensation equal to the full direct cost of relocation when:

   i. The natural gas utility required to be relocated is currently located on land which is being acquired by the Province for the highway improvement project; and

   ii. The highway improvement project design makes it necessary to relocate the pipeline.

d) Any compensation provided in (c) is limited to "in kind" replacement with new utility infrastructure which has the same capacity and capability as the existing utility infrastructure that requires relocation. The cost of any upgrades or improvements (e.g. increased capability or capacity) will not be compensated by the Ministry.

15.2.4 Compensation for Provincially Regulated Oil and Gas Pipelines

a) Provincially regulated oil and gas pipelines are:
   i. Regulated by the British Columbia Oil and Gas Commission per the Oil and Gas Activities Act and associated regulations;
   ii. Located entirely within British Columbia; and
   iii. Operate at pressures equal to or greater than 700 kPa.

b) As per the Pipeline Crossings Regulation, the Ministry does not provide compensation to relocate provincially regulated oil and gas pipelines. This applies regardless of whether the pipeline is permitted and currently located on highway right-of-way or currently located on land which is being acquired by the Province and which will become highway right-of-way (and includes land where the pipeline company has a statutory right-of-way).

c) For more information on processes and procedures for relocating provincially regulated oil and gas pipelines, Ministry staff should contact Utilities Services.

15.2.5 Compensation for Federally Regulated Oil and Gas Pipelines

a) Federally regulated oil and gas pipelines are:
   i. Regulated by the National Energy Board per the National Energy Board Act and associated regulations;
   ii. Cross interprovincial or international borders; and
   iii. May operate at any pressure.

b) Unless specifically noted in the Ministry-issued permit, the Ministry does not provide compensation for the relocation of federally regulated pipelines which are located in highway right-of-way and must be relocated to accommodate highway improvement projects.

15.2.6 Compensation for Local Government Water, Sewer, and Irrigation Lines

a) For the purpose of this section, a local government is defined as a:
   i. Municipality;
   ii. Regional District; or
   iii. Irrigation District.

b) The Ministry provides compensation equal to the full direct cost of relocation for local government owned water, sewer, and irrigation lines.

c) Any compensation provided to local governments is limited to "in kind" replacement with new or relocated water, sewer, and/or irrigation infrastructure which has the same capacity and capability as the infrastructure that is being relocated. The cost of upgrades (e.g. increased capability or capacity) will not be compensated by the Ministry.

15.2.7 Compensation for Electric Utilities

a) For the purpose of this section, electric utilities are defined as:
   i. Provincially regulated electric utilities regulated by the British Columbia Utilities Commission;
   ii. Municipally-owned electric utilities; and
   iii. Independent Power Producers (IPPs).

b) The Ministry does not provide compensation if the electric utility infrastructure required to be relocated is currently permitted on highway right-of-way.

c) The policy in (b) does not apply to BC Hydro or to the electrical arm of FortisBC as these organizations have Protocol Agreements (see Chapter 15.2.2). Compensation for relocations is provided as per these Protocol Agreements.

d) The policy in (b) does not apply to municipally-owned electric utilities. Instead, the policies outlined in chapter 15.2.6 regarding local government utilities apply.

15.2.8 Compensation for Telecommunications Infrastructure

a) The Ministry does not provide compensation for relocating telecommunications infrastructure that is currently permitted within highway right-of-way.

b) The Ministry does not compensate unpermitted third-party utility organizations that attach lines and cables to support structures (i.e. poles and underground conduit) already permitted to another utility organization.

c) The policies in (a) and (b) do not apply to Telus as this organization has a Protocol Agreement (see Chapter 15.2.2). Ministry staff should consult the Protocol Agreement or contact Utilities Services in Ministry headquarters for more information.

15.2.9 Compensation for Wireless Communications

a) Several telecommunications companies have entered into Master Use Agreements (see Chapter 21) with the Ministry to install wireless communication sites on highway right-of-way. Ministry staff may review the list of companies with a Master Use Agreement here.

b) As per the Master Use Agreements, the Ministry does not provide compensation for wireless communications infrastructure required to be relocated that is currently permitted on highway right-of-way.

15.2.10 Compensation for Fibre Optic Cable

a) Several telecommunications companies have entered into Master Use Agreements (See Chapter 22) with the Ministry to install fibre optic cable within Ministry-owned conduit. Ministry staff may review the list of companies with a Master Use Agreement here.

b) As per the Master Use Agreements, the Ministry does not provide compensation for relocating fibre optic cables that are currently permitted within Ministry-owned conduit on highway right-of-way.

c) Fibre optic cable or fibre optic infrastructure that is currently permitted on highway right-of-way, outside of conduit owned by the Ministry

is not under a Master Use Agreement. Unless an applicable Protocol Agreement exists, the Ministry does not provide compensation for the relocation of such fibre optic cable or fibre optic infrastructure.

15.2.11 Compensation for Utilities on Ministry Structures

a) For this section, Ministry structures include all buildings, bridges, tunnels, retaining walls, culverts, conduits, towers, signs, and poles owned by the Ministry and located on highway right-of-way.

b) The Ministry does not provide compensation for the relocation of utility infrastructure of any kind currently located on or within Ministry structures.

15.3 Compensation for Other Scenarios

15.3.1 Relocation Because of a Natural Occurrence

a) For this section, a natural occurrence is an occasional, natural event or disaster, including (but not limited to): earthquakes, landslides, avalanches, floods, wildfires, windstorms and tsunamis.

b) The Ministry does not provide compensation for the relocation of utility infrastructure of any kind required to be relocated because of a natural occurrence or event.

15.3.2 Relocations Initiated by a Third Party

a) For this section, a third party is an individual, group or company, agency, public body, society, municipality, regional district, authority, or other organization, whether public or private, other than the Ministry.

b) Notwithstanding projects undertaken in partnership with local governments, the Ministry does not provide compensation for the relocation of utility infrastructure of any kind for relocations initiated by a third party.

15.3.3 Highway Operations

a) The Ministry does not provide compensation to utility organizations for protecting utility infrastructure during or as a result of highway maintenance or operations work. Such activities include (but not limited to): rock scaling, installation or maintenance of luminaries, installation or maintenance of overhead signage and traffic signals, tree trimming, and avalanche control.

16. GENERAL INFORMATION ON UTILITY POLICIES AND STANDARDS

References:

N/A

16.1 Approach to Location Policies and Technical Standards

a) The Ministry has established policies and standards for the installation of utility infrastructure within highway right-of-way to ensure the safety of the traveling public, maintain operational efficiency, and ensure the Ministry's ability to expand highways to meet future transportation needs. The following four chapters outline the various policies and standards for specific types of utility installations:

   i. Chapter 17: Oil and Gas Pipelines;

   ii. Chapter 18: Water and Sewer Lines;

   iii. Chapter 19: Overhead Power and Communications; and

   iv. Chapter 20: Underground Power and Communications.

b) This manual also contains policies and standards pertaining to methods of utility installation (see Chapter 25) and for proposed attachments to Ministry structures such as bridges (see Chapter 26).

c) Utilities may receive authorization to install utility infrastructure within highway right-of-way only where they comply with the Ministry's policies and standards. In the following chapters, these have largely been divided into two categories:

   i. Location policies – determine where utilities can and cannot be installed within the highway right-of-way; and

   ii. Technical standards – outline specific installation criteria for specific utility types within the highway right-of-way.

d) The Ministry's policies and standards are meant to ensure the safety highway users and protect the integrity of the highway right-of-way and are not meant to replace any standards set by legislation or by regulators which have authority over the utility in question.

e) If a utility organization's application does not meet either the location policies or the technical standards the application may be eligible to be reviewed as per the Ministry's exception review process (see Chapter 27).

f) The discretion and expertise of Ministry staff will govern in the absence of specific Ministry policies or standards related to a certain type of utility or specific installation.

16.2 Ministry Technical Standards

16.2.1 Highest Standards Apply

a) The highest or more stringent standard will apply to any utility installation on highway right-of-way where the Ministry, utility regulator, legislation, industry, or utility organization itself have set a standard or requirement.

16.2.2 Design Responsibility

a) The utility organization is responsible for the design of any utility infrastructure which it proposes to install within the highway

right-of-way, for the construction of the utility infrastructure, and for the ongoing operation and maintenance of the utility infrastructure once it has been installed.

b) Utility installations must be designed for longevity and in a manner that does not require frequent servicing and maintenance.

c) All new utility installations (or adjustments or upgrades to existing installations) must make provisions for known or planned expansion of such installations, particularly when such installations are attached to Ministry structures or are buried underground in the highway right-of-way.

d) All utility installations must comply with industry and regulatory design and engineering standards.

17. OIL AND GAS PIPELINES POLICIES AND STANDARDS

References:

Legislation:

- Gas Utility Act
- National Energy Board Act (Canada)
- Oil and Gas Activities Act
- Pipeline Safety Act (Canada)
- Safety Standards Act
- Utilities Commission Act

Other Documents and Sources:

- CSA Z662 Oil and Gas Pipeline Systems

17.1 Description of Utilities Included in this Chapter

a) The policies and standards in this chapter apply to all oil and gas pipelines (including natural gas utilities) proposed to be within or cross highway right-of-way.

b) The following definitions apply throughout this chapter:

   i. High Pressure Pipelines: Pipelines intended to operate at pressures greater than 2,070 kPa (300 psi);

   ii. Intermediate Pressure Pipelines: Pipelines intended to operate at pressures greater than 700 kPa (100 psi) and up to 2,070 kPa (300 psi); and

   iii. Low Pressure Pipelines: Pipelines intended to operate at pressures which are less than or equal to 700 kPa (100 psi), and includes lateral service connections from the gas distribution mains which are within and parallel to the highway right-of-way to the gas customer.

c) High pressure pipelines are often referred to as transmission pipelines. Transmission pipelines move oil and gas over longer distances and are generally larger in diameter (usually between 250 mm and 450 mm, but can be 1200 mm or greater). These pipelines are usually installed within their own right-of-way, only crossing highways from time-to-time.

d) Low and intermediate pressure pipelines are often referred to as distribution pipelines. Distribution pipelines deliver commodities such as natural gas to individual homes and businesses and are generally smaller in diameter (usually about 12 mm to 150 mm). Distribution mains and service connections are more commonly installed within highway right-of-way.

e) This chapter does not include policies and standards related to pump stations, compressor stations, city gates, or similar facilities as these facilities are not allowed to be installed within highway right-of-way.

17.2 Regulations and Standards Set by Other Authorities

a) Oil and gas pipelines are regulated at the federal or provincial level by the following authorities. For more information on pipeline regulation please see Chapter 2.

   i. The National Energy Board regulates interprovincial and international oil and gas pipelines operating at all pressures.

ii. The BC Oil and Gas Commission regulates intraprovincial oil and gas pipelines at pressures equal to or greater than 700 kPa.

iii. The British Columbia Utilities Commission and Technical Safety BC regulate intraprovincial piping infrastructure use to distribute natural gas at less than 700 kPa to consumers by a gas utility as defined in the Gas Utility Act.

b) Oil and gas pipelines (including natural gas utilities) must be designed, installed, operated, and maintained in accordance with the standards set out in the latest edition of CSA Z662 Oil and Gas Pipeline Systems.

17.3 Location Policies

17.3.1 Prohibited Locations within Highway Right-of-Way

a) Locations within highway right-of-way where pipelines are prohibited include:

i. High, intermediate, and low pressure pipelines within and parallel to freeways and expressways (due to the fact that drivers on freeways and expressways expect high-speed, free-flowing traffic, and any activity which disrupts traffic flow such as construction equipment and service vehicles accessing work sites directly from freeway lanes may increase the risk of an accident);

ii. Low pressure service connections crossing Freeways and Expressways; and

iii. Pipelines, regardless of pressure, crossing highway right-of-way at intersections or interchanges.

b) Exceptions to prohibited locations must be approved by the Office of the Chief Engineer (see Chapter 27).

17.3.2 Unsuitable Locations within Highway Right-of-Way

a) Certain factors or conditions may make sections of the highway right-of-way unsuitable for pipeline installations. These locations must be avoided. Exceptions require the approval from the District Manager (or designate). Consultation with Ministry engineering staff and/or other subject matter experts may also be required.

b) Unsuitable locations within highway right-of-way that must be avoided include:

i. Installations near or in high embankments or rock cutslopes (due to risk of settlement);

ii. Installations in close proximity to bridge footings, culverts and retaining walls (due to risk of erosion and instability in the event of failure);

iii. Locations where soil or other conditions make it difficult to maintain full depth of cover;

iv. Locations having marginal slope stability or problematic soil or rock conditions;

v. Under ditch slopes or ditch bottoms for pipeline installations within and parallel to the highway;

vi. Locations where there is planned expansion of the highway, including locations along highway right-of-way which are expected to be upgraded to freeway or expressway within the next 20 years;

vii. Locations that would interfere with existing or the planned future installation of luminaires, traffic signals, signs, ITS infrastructure, or other highway facilities;

viii. Locations where an existing pipeline is already permitted within and parallel to the highway right-of-way and the application is for the opposite side of the highway right-of-way; and

ix. Locations that will interfere with highway access, intersections, or maintenance activities.

17.3.3 Pipelines Within and Parallel to Highway Right-of-Way

a) For oil and gas pipelines governed by the Oil and Gas Activities Act and National Energy Board Act each, a 30-meter safety exclusion zone exists perpendicularly on either side of the pipeline centreline. Both acts require that any party planning any activities that will disturb the earth to a depth greater than 30 cm within the safety exclusion zone first obtain the written permission from the pipeline company. If a pipeline's safety exclusion zone overlaps with the highway right-of-way, the Ministry's ability to perform a variety of standard highway maintenance activities could be hindered. As such, high and intermediate pressure oil and gas pipelines governed by either act should not be permitted within and parallel to highway right-of-way unless absolutely necessary and only for short distances. Ministry staff should also take into consideration the costs and challenges of relocating such pipelines for future highway expansion. The Ministry encourages pipeline proponents to install such pipelines outside of highway right-of-way and at least 30 meters away from the highway right-of-way boundary.

b) Where pipelines of any pressure are permitted within and parallel to the highway right-of-way, they shall be aligned parallel and within 2 m of the boundary of the highway right-of-way.

c) The Ministry may consider a reasonable alignment for pipelines within and parallel to highway right-of-way that does not comply with the 2 m alignment standard if all the following conditions are met (see Chapter 17.7 for more information):

i. The highway right-of-way is irregular;

ii. There is no impact to backslopes, drainage systems or other improvements, or the safe operation and maintenance of the highway; and

iii. The alignment of the pipeline meets clearance requirements from the highway prism.

17.3.4 Pipelines Under the Roadway

a) Longitudinal pipeline installations under the roadway (which may include traveled lanes, parking lanes, sidewalks, boulevards, medians, and shoulders) are only allowed by exception and will only be considered for pipelines operating at pressures less than 700 kPa. See Chapter 27 and Chapter 17.8 for more information.

17.3.5 Pipeline Attachment to Ministry Structures

a) Pipeline installations proposed to be attached to Ministry bridges or other structures must meet the policies and standards in Chapter 26.

17.3.6 Pipeline Abandonment

a) When a pipeline owner determines that a pipeline is no longer needed and is considering abandonment, the first consideration should be removal. The pipeline owner must consult with the applicable District to discuss options to either remove the pipeline or, in some cases, abandon the pipeline in place.

b) If removal is determined to be either not possible or impractical, the District Manager (or designate) may allow a pipeline to be abandoned in place within the highway right-of-way provided doing so will not negatively affect the highway prism or continued maintenance and operation of the highway.

c) No abandonment work shall take place without the pipeline company first receiving written permission from the District Manager (or designate). This permission may be contingent upon the pipeline company first indicating in writing what measures the pipeline company will use to ensure the abandoned in place pipeline remains safe (e.g. by performing periodic inspections, undertaking maintenance as required).

d) Where pipelines are abandoned in place, they shall be abandoned as per CSA Z662 standards and be:

   i. Emptied of service fluids;

   ii. Purged or appropriately cleaned or both in a manner that leaves no mobile materials remaining in the pipeline;

   iii. Physically separated from any in-service piping or facilities;

   iv. Capped, plugged, or otherwise effectively sealed;

   v. Infilled with concrete;

   vi. Cut off at pipeline depth; and

   vii. Left unpressurized.

e) All costs associated with pipeline abandonment in highway right-of-way, whether by removal or through abandonment in place, are the responsibility of the pipeline owner. This includes restoration of pavement and other highway facilities to Ministry standards if negatively impacted by abandonment work.

f) As the permittee, the pipeline owner is responsible for any pipelines abandoned in place, including for ongoing maintenance, leaks, or other issues associated with the abandoned pipeline at the pipeline company's sole expense.

17.4 Technical Standards

17.4.1 Crossings

a) Pipelines must cross the highway right-of-way at an angle as close to 90° as practicable.

b) Pipelines proposed to cross the highway right-of-way at an angle less than 70° will be considered at the discretion of Development Services staff. Additional justification from the utility organization may be required.

c) Pipelines proposed to cross the highway right-of-way at less than 45° will be considered an exception and requires approval from the District Manager (or designate). Additional justification from the utility

organization is required.

d) Diagonal crossings of intersections are not permitted.

e) Pipelines crossing the highway right-of-way must be installed by trenchless methods unless otherwise approved by the District Manager (or designate) and be done in accordance with the policies and standards in Chapter 25.

17.4.2 Offsets

a) For pipeline installations within and parallel to the highway right-of-way in rural areas, the minimum horizontal offset from the highway prism is 2 m beyond either the toe of a fill slope or the top of a cutslope.

b) For pipeline installations within and parallel to the highway right-of-way in urban areas, the minimum horizontal offset from existing curb and gutter is 2 m beyond the outside edge of the curb.

c) The minimum offset from bridges and other Ministry structures, including culverts greater than 3 m in diameter, will be determined on a case-by-case basis by Ministry Structural Engineering staff (See Chapter 27.3).

d) For all pipelines, the minimum offset from signs, signal structures, and culverts less than 3 m in diameter is 0.5 m.

e) The Ministry will not prescribe minimum clearances from other utilities. Clearances must be in accordance with the governing industry, Canadian Standards Association, or regulator standards.

17.4.3 Depth of Cover

a) The depth of cover standards listed in this section are minimums. Ministry staff may require increased depth of cover if conditions warrant. An example is under ditches where there is a possibility that ditch depth will be increased by scour, maintenance operations, or the need to increase ditch capacity.

b) The minimum depth of cover varies depending on the operating pressure of the pipeline and its proposed location within the highway right-of-way. Depth of cover shall be measured from the surface (e.g. top of pavement or design ditch bottom) to the top of the carrier pipe or casing, as show in the table below:

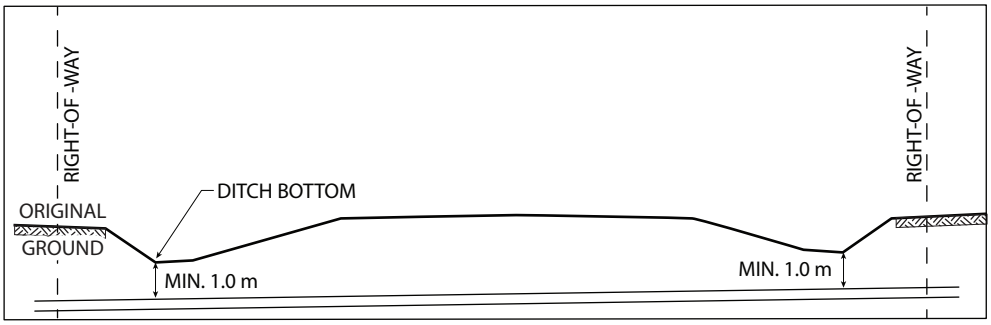
Table 17-1: Depth of Cover for Pipelines

Pipeline Pressure	Under Pavement and Shoulders	Design Ditch Bottom	Elsewhere in the Right-of-Way
Greater than 2,070 kPa (high pressure)	1.4 m	1 m	1 m
Greater than 700 kPa and up to 2,070 kPa (intermediate pressure)	1.2 m	1 m	1 m
Less than or equal to 700 kPa (low pressure)	1.2 m	1 m	1 m

c) Pipelines must cross the highway right-of-way at a consistent depth for the entire crossing, whilst simultaneously meeting all of the minimum depth of cover requirements outlined in the Table 17-1 above.

For example, the pipeline crossing shown in Figure 17-1 below must also be at least 1.2 m (or 1.4 m if high pressure) below the pavement and shoulders.

Figure 17-1: Example Pipeline Crossing Diagram



d) The District may permit substandard depth of bury where necessary, provided that the pipeline is protected by concrete slabs or other protective measures which provide a standard of protection which is equivalent to the standard depth of cover and are approved and signed (or sealed) by a Professional Engineer who is experienced in pipeline design and registered in B.C. at the time a permit application is submitted to the Ministry. Exceptions must be approved by the District Manager and will be made only in special circumstances and for short distances. Examples include:

   i. Locations where the trench is to be cut in solid rock; and
   ii. Locations where the presence of other utility infrastructure makes it impossible to comply with the minimum depth of cover standards.

17.5 Protective Measures

a) Where, in the Ministry's view, a pipeline is vulnerable because of its depth, location in the highway right-of-way, etc., the Ministry may require special protective measures.

b) The onus is on the pipeline owner to demonstrate that the design of any protective measures addresses Ministry concerns related to public safety, highway operations and protection of highway facilities. The Ministry may require that the designs for any protective measures be approved and signed (or sealed) by a Professional Engineer who is experienced in pipeline design and registered in B.C. at the time a permit application is submitted to the Ministry.

c) Additional protection for pipeline installations may take the form of:

   i. Casings;
   ii. Reinforced concrete caps or protective slabs designed to meet specific site conditions (bagged concrete will not be acceptable);
   iii. Pipe with increased pipe wall thickness or strength which is designed to withstand higher than normal loads; or
   iv. Increased depth of cover.

d) Pipeline protection consisting of increased pipe wall thicknesses may be used either in addition to, or as a replacement for pipeline casings for new installations. The continued use of pipeline casings may be required,

however, where in the opinion of the Ministry, installation type, or local conditions such as the soil type, or the nature of the highway facility require increased protection.

e) If casings are used, they must extend across the full width of the highway right-of-way. Casings shall be designed to have a lifespan greater than or equal to that of the carrier pipe.

f) Protective measures for pipeline installations provide for the following benefits:

   i. Casings allow for the removal and/or replacement of a ruptured or broken carrier pipe without the need for excavation of the roadway;

   ii. Casings and other protective measures help prevent spills and leaks within the highway right-of-way and surrounding environment; and

   iii. Casings and other protective measures help protect of the pipeline from external loads and from accidental strikes due to highway operation and maintenance activities, and activities performed on highway right-of-way by third parties.

17.6 Appurtenances

17.6.1 Conformity with Clear Zone

a) Any aboveground objects and appurtenances must meet the Ministry's clear zone policies (see Chapter 19.4.3).

17.6.2 Aboveground Markers

a) Aboveground markers are required in urban and rural locations (generally where there is open drainage along the highway) for oil and gas pipeline installations above 700 kPa pressure, and for any pipelines used to transport dangerous commodities.

b) Aboveground markers must be placed at both ends of road crossings at the highway right-of-way edge, and at 200 m intervals (or as otherwise prescribed by the Ministry) for pipeline installations located within and parallel to the highway right-of-way.

c) Aboveground markers must be consistent with Canadian Standards Association requirements, and must include:

   i. The word "warning," "caution", or "danger" clearly displayed in 25 mm high, bold lettering;

   ii. The pipeline type, size and pressure, for example: "High Pressure Natural Gas Pipeline" in 13 mm high bold lettering; and

   iii. The name of the operating company and an emergency notification information, including an emergency telephone number with area code.

d) Aboveground markers should also include a statement such as "Call before you dig" and provide contact information for BC One Call.

e) Where the placing of aboveground markers would not serve their intended purpose or would be impractical (such as in heavily populated built-up urban areas), alternative identification methods adopted by the pipeline industry and approved by the District Manager (or designate) may be used.

17.6.3 Underground Markers

a) Non-metallic pipe must be marked by underground markers or tracer wire which makes it possible to locate the pipe using electronic pipe location equipment.

17.6.4 Vent Standpipes

a) Where cased crossings are installed, vent standpipes must be located and installed in such a way that they do not interfere with highway right-of-way maintenance and are not concealed by vegetation.

b) The preferred location for vent standpipes is as close as possible to the edge of the highway right-of-way.

c) Where they are required, vent standpipes shall:

i. Be connected 30 cm from the ends of the casing;

ii. Be no less than 5 cm in diameter;

iii. Extend at least 1.2 m above the ground surface, and the top of each vent standpipe shall be fitted with a turn-down elbow, properly screened to prevent water from entering the casing; and

iv. Be equipped with identification markers.

17.6.5 Drains

a) Drains are required for casings on pipelines that are carrying liquids, liquified gas, or gas which is heavier than air.

b) Drains may outfall only into facilities and locations approved by the Ministry, and/or by other government agencies having regulatory authority.

17.6.6 Valves

a) Valves are mechanical devices used to control the flow of oil and gas. The location of valves within highway right-of-way is subject to approval by the Ministry.

b) Valves must be installed underground and clear of the highway prism, intersections, and driveways. Valves must also be located in such a way that they will not interfere with highway operations or maintenance.

17.6.7 Manholes

a) Manholes should be located outside of the highway prism and as close to the edge of the right-of-way as possible.

b) Manholes which are located within the clear zone must be at ground level or be designed in such a way that they do not create an obstacle.

c) In both urban and rural areas where the posted speed is greater than 60 km/h, manholes must not be installed in the pavement, on shoulders, or in medians.

d) Manholes may be located in the pavement in urban areas, provided:

i. They are not in the wheelpath;

ii. There are two or more lanes in each direction; and

iii. The posted speed is 60 km/h or less.

17.6.8 Cathodic Protection

a) Cathodic protection will be installed at locations and in such a manner that preclude damage to bridges, reinforced concrete structures, and other highway structures and facilities.

17.7 Location Templates

17.7.1 General Location Template Information

a) The following location templates depict locations for pipelines proposed to be installed within and parallel to highway right-of-way. The templates are to be used as visual guides for Ministry staff and utility organizations and are not meant to be a replacement of the policies and standards noted elsewhere in this manual.

b) The templates are based on ideal conditions and show a progression of the Ministry's preferred locations for pipelines within the highway right-of-way.

17.7.2 Location Templates 1, 2, and 3 – Fill

a) Location Template 1 - Pipeline installed within 2 m of the edge of the right-of-way. Generally acceptable if all other standards are met.

b) Location Template 2 - Pipeline installed within 5 m of the edge of the right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Template 1;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

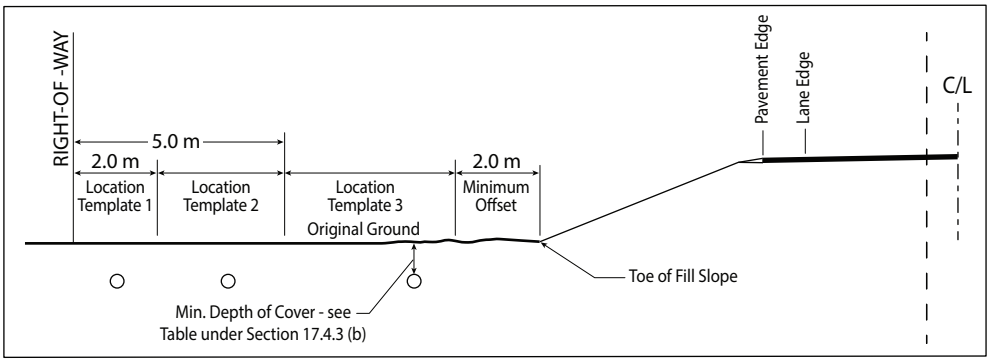
iii. All other standards are met.

c) Location Template 3 – Pipeline installed between a point that is 2 m beyond the toe of a slope and a point that is 5 m from the edge of the right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Templates 1 or 2;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

iii. All other standards are met.



17.7.3 Location Templates 1, 2, and 3 – Cut

a) Location Template 1 – Pipeline installed within 2 m of the edge of the right-of-way. Generally acceptable if all other standards are met.

b) Location Template 2 – Pipeline installed within 5 m of the edge of the right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Template 1;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

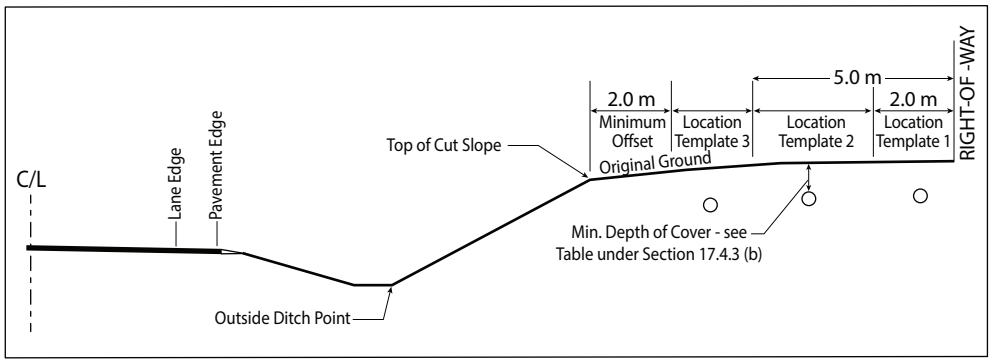
iii. All other standards are met.

c) Location Template 3 – Pipeline installed between a point that is 2 m beyond the back of a ditch and a point that is 5 m from the edge of the right-of-way. Acceptable if:

i. It is not possible to comply with Location Templates 1 or 2;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations;

iii. All other standards are met.



17.8 Utility Location Templates by Exception

17.8.1 General Exception Template Information

a) The following utility location templates depict locations within highway right-of-way which are only allowed by exception by the District Manager (or designate) in consultation with applicable engineering discipline(s) and/or other subject matter experts (see Chapter 27).

b) The District Manager may require that the pipeline design includes protective caps, increased depth of cover, or other measures which are approved and signed (or sealed) by a Professional Engineer who is experienced in pipeline design and is registered in B.C. at the time a permit application is submitted to the Ministry.

17.8.2 Template 4 – Under Ditches

a) No pipelines are permitted under ditch slopes or ditch bottoms except for crossings. An exception may be granted by the District Manager (or designate) where:

i. The line to be installed is a low pressure pipeline;

ii. Alternate locations (including locations outside the highway right-of-way) are not feasible because physical constraints (such as rock cuts or environmentally sensitive sites or conditions) make it impossible or extremely impractical to comply with other locations, and an installation outside the highway right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

iii. The location is not subject to scour;

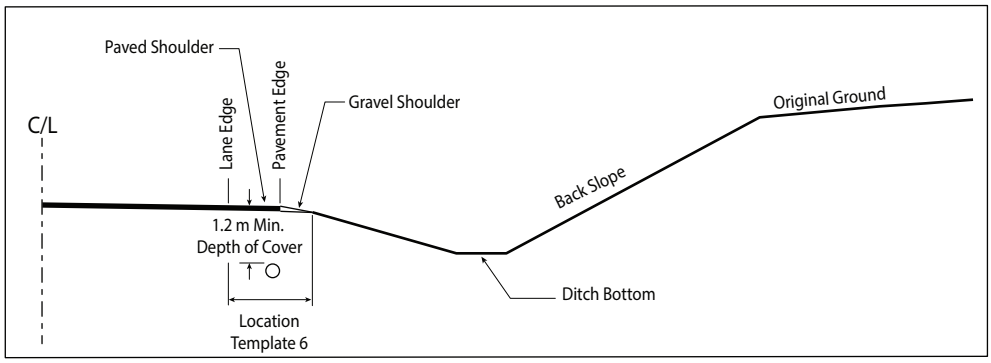
iv. The Ministry is not planning construction which would change the location or elevation of the ditch;

v. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

vi. The installation will not have an adverse effect on highway maintenance, safety or operations;

vii. The top of the pipeline or casing is at least 1 metre below the hard bottom of the ditch; and

viii. All other policies and standards will be met.



17.8.3 Template 5 – Under Sidewalks

a) No pipelines are permitted directly under sidewalks except for crossings. An exception may be granted by the District Manager (or designate) where:

i. The line to be installed is a low pressure pipeline;

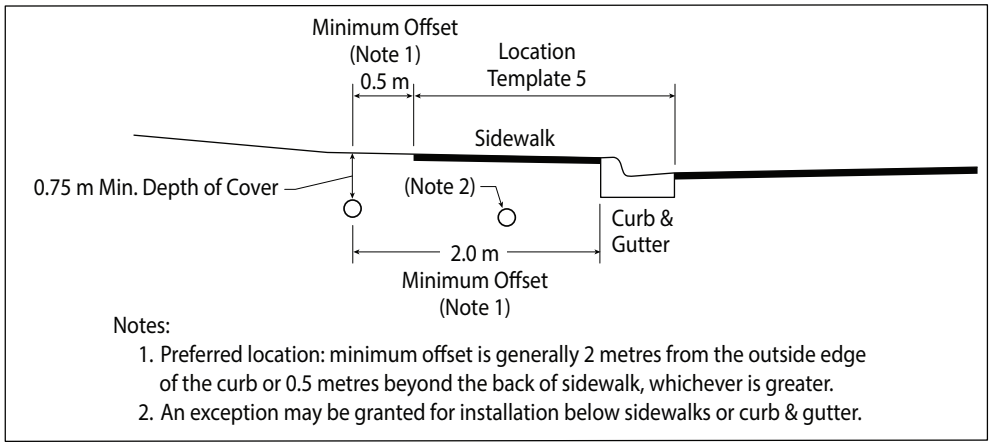
ii. The District Manager is satisfied that physical constraints or other factors or conditions (such as limited right-of-way width in urban areas) make it impossible or extremely impractical to comply with other locations, and an installation outside the highway right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

iii. The Ministry is not planning construction which would impact or change the location or elevation of the curb, gutter or sidewalk;

iv. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

v. The installation will not have an adverse effect on highway maintenance, safety or operations; and

vi. All other policies and standards will be met.



Notes:

1. Preferred location: minimum offset is generally 2 metres from the outside edge of the curb or 0.5 metres beyond the back of sidewalk, whichever is greater.
2. An exception may be granted for installation below sidewalks or curb & gutter.

17.8.4 Template 6 – Under Shoulders

a) No pipelines are permitted under shoulders or other locations within the roadway (including traveled lanes, parking lanes, boulevards) except for crossings. An exception may be granted by the District Manager (or designate) where:

i. The line to be installed is a low pressure pipeline;

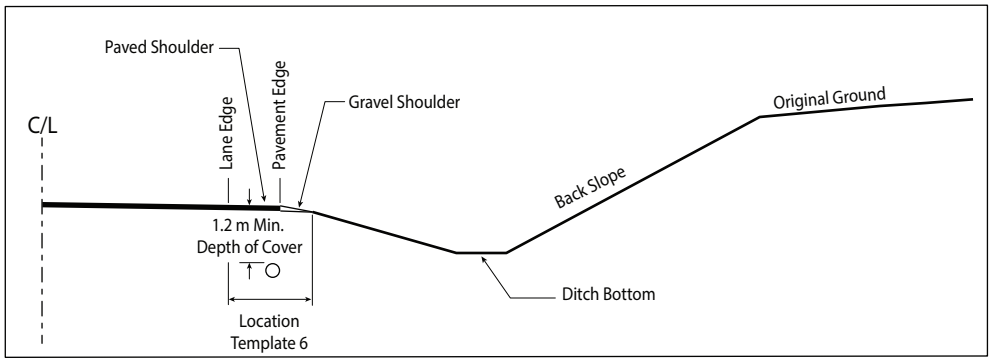
ii. The District Manager is satisfied that physical constraints (such as rock cuts or limited right-of-way width in urban areas) make it not possible to comply with other locations, and an installation outside the right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

iii. The Ministry is not planning construction which would change the location or profile of the roadway;

iv. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

v. The installation will not have an adverse effect on highway maintenance, safety or operations; and

vi. All other policies and standards will be met.



18. WATER AND SEWER LINES POLICIES AND STANDARDS

References:

N/A

18.1 Description of Utilities Included in this Chapter

a) The policies and standards within this chapter apply to all sanitary sewer lines, storm drains, domestic water lines, and irrigation ditches proposed to be within or cross highway right-of-way. These types of installations are referred to as "water and sewer lines" throughout this chapter.

b) High pressure water lines are defined as those designed to operate at pressures greater than 1380 kPa (200 psi).

c) This chapter does not include policies and standards related to pump stations, lift stations, or similar facilities as these facilities are not allowed to be installed within highway right-of-way.

18.2 Regulations and Standards Set by Other Authorities

a) Design, construction, and operational standards for water and sewer lines within highway right-of-way must comply with or exceed standards established by legislation and/or by all regulatory agencies, local governments, health authorities, etc., which have authority.

18.3 Location Policies

18.3.1 Prohibited Locations Within Highway Right-of-Way

a) Locations within the highway right-of-way where water and sewer lines are prohibited include:

i. High pressure water lines within and parallel to any class of highway;

ii. Water and sewer lines within and parallel to freeways and expressways (due to the fact that drivers on freeways and expressways expect high-speed, free-flowing traffic, and any activity which disrupts traffic flow such as construction equipment and service vehicles accessing work sites directly from freeway lanes may increase the risk of an accident);

iii. Water and sewer service connections crossing freeways and expressways; and

iv. Water and sewer lines crossing highway right-of-way at intersections or interchanges;

b) Exceptions to prohibited locations must be approved by the Office of the Chief Engineer (see Chapter 27).

18.3.2 Unsuitable Locations Within Highway Right-of-Way

a) Certain factors or conditions may make sections of the right-of-way unsuitable for the installation of water and sewer lines. These locations must be avoided. Exceptions require the approval of the District Manager (or designate). Consultation with Ministry engineering staff and/or other subject matter experts may also be required.

b) Unsuitable locations within sections of the right-of-way that must be avoided include:

i. Installations near or in high embankments or rock cutslopes (due to risk of settlement);

ii. Installations in close proximity to bridge footings, culverts, and retaining walls (due to risk of erosion and instability in the event of failure);

iii. Locations where soil or other conditions make it difficult to maintain full depth of cover;

iv. Locations having marginal slope stability or problematic soil or rock conditions;

v. Under ditch slopes or ditch bottoms for water and sewer line installations within and parallel to the highway;

vi. Locations where there is planned expansion of the highway, including locations along highway right-of-way which are expected to be upgraded to freeway or expressway within the next 20 years;

vii. Locations where an existing water or sewer line is already permitted within and parallel to the highway right-of-way and the application is for the opposite side of the highway right-of-way;

viii. Locations that would interfere with existing or the planned future installation of luminaires, traffic signals, signs, ITS infrastructure, or other highway facilities; and

ix. Locations that will interfere with highway access, intersections, or maintenance activities.

18.3.3 Water and Sewer Lines Within and Parallel to Highway Right-of-Way

a) Water and sewer lines shall be aligned and parallel and within 2 m of the boundary of the highway right-of-way.

b) The Ministry may consider a reasonable alignment for water and sewer lines within and parallel to highway right-of-way that does not comply with the 2 m alignment standard if all the following conditions are met (see Chapter 18.7 below):

i. The highway right-of-way is irregular;

ii. There is no impact to backslopes, drainage system or other improvements, or the operation and maintenance of the highway; and

iii. The alignment of the lines meets clearance requirements from the highway prism.

18.3.4 Water and Sewer Lines Under the Roadway

a) Longitudinal installations of water and sewer line under the highway prism (which may include traveled lanes, parking lanes, sidewalks, boulevards, medians and shoulders) are only allowed by exception, and will only be considered for water and sewer lines operating at pressures lower than 1380 kPa (see Chapter 18.7 below).

18.3.5 Attachment to Ministry Structures

a) Installations proposed to be attached to Ministry bridges or other structures must follow the policies and standards in Chapter 26.

18.3.6 Abandonment of Water and Sewer Lines

a) Notwithstanding any other regulatory, Canadian Standards Association, or accepted industry standards for water and sewer lines, the policies related to pipeline abandonment in Chapter 17.3 shall also apply to the abandonment of water and sewer lines.

18.4 Technical Standards

18.4.1 Crossings

a) Water and sewer lines must cross the highway right-of-way at an angle as close to 90° as practicable.

b) Water and sewer lines proposed to cross the highway right-of-way at less than 70° will be considered at the discretion of Development Services staff. Additional justification from the utility organization may be required.

c) Water and sewer lines proposed to cross the highway right-of-way at less than 45° will be considered an exception and requires approval from the District Manager (or designate). Additional justification from the utility organization is required.

d) Diagonal crossings of intersections are not permitted.

e) Water and sewer lines crossing the highway right-of-way must be installed by trenchless methods unless an exception is approved by the District Manager (or designate) and be done in accordance with the policies and standards in Chapter 25.

18.4.2 Offsets

a) For water and sewer line installations within and parallel to the highway right-of-way in rural areas, the minimum horizontal offset is 2 m beyond either the toe of a fill slope or the top of a cut slope.

b) For water and sewer line installations within and parallel to the highway right-of-way in urban areas, the minimum horizontal offset from existing curb and gutter is 2 m beyond the outside edge of the curb.

c) The minimum offset from bridges and other Ministry structures, including culverts greater than 3 m in diameter, will be determined on a case by case basis by Structural Engineering staff (see Chapter 27.3).

d) The minimum offset from signs, signal structures, and culverts less than 3 m in diameter is 0.5 m.

e) The Ministry will not prescribe minimum clearances from other utilities. Clearances must be in accordance with the governing industry, Canadian Standards Association, or regulator standards.

18.4.3 Depth of Cover

a) The depth of cover standards listed in this section are minimums. Ministry staff may require increased depth of cover if conditions warrant. An example is under ditches where there is a possibility that ditch depth will be increased by scour, maintenance operations, or the need to increase ditch capacity.

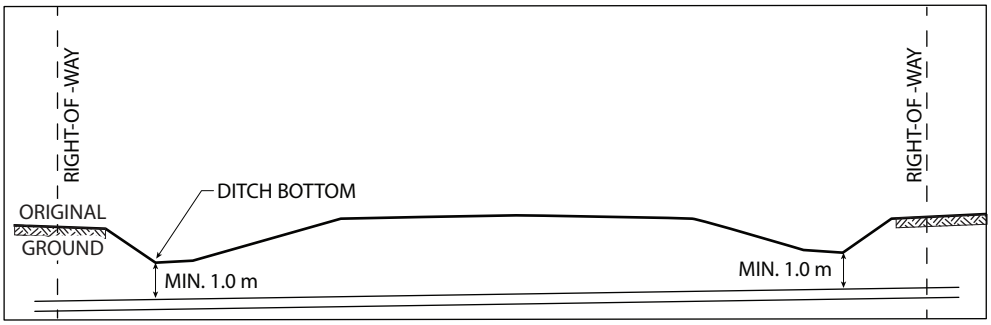
b) The minimum depth of cover varies depending on the operating pressure of the water or sewer line and its proposed location within the highway right-of-way. Depth of cover shall be measured from the surface (e.g. top of pavement or design ditch bottom) to the top of the water or sewer pipe or casing, as show in the table below:

Table 18-1: Depth of Cover for Water and Sewer Lines

Pipeline Pressure	Under Pavement and Shoulders	Design Ditch Bottom	Elsewhere in the Right-of-Way
Greater than 1,380 kPa	1.2 m	1 m	1 m
Less than or equal to 1380 kPa	1.2 m	1 m	.75 m

c) Water and sewer lines must cross the highway right-of-way at a consistent depth for the entire crossing, whilst simultaneously meeting all of the minimum depth of cover requirements outlined in Table 18-1 above. For example, the water/sewer line shown in figure 18-1 below must also be at least 1.2 m below the pavement and shoulders.

Figure 18-1: Example Water and Sewer Line Crossing Diagram



d) Depth of cover must be sufficient to avoid freezing. In colder climate areas of the province, the depth of cover for thermal protection against freezing is likely to govern the install depth of a waterline unless the line is designed with thermal insulation.

e) The District may permit substandard depth of bury where necessary, provided that the water or sewer line is protected by concrete slabs other protective measures which provide a standard of protection which is equivalent to the standard depth of cover and are approved and signed (or sealed) by a Professional Engineer who is experienced in pipeline design and registered in B.C. at the time a permit application is submitted to the Ministry. Such exceptions must be approved by the District Manager and will be made only in special circumstances and for short distances. Examples include:

i. Locations where the trench is to be cut in solid rock; and,

ii. Locations where the presence of other utility infrastructure makes it impossible to comply with the minimum depth of cover standards.

18.5 Protective Measures

a) Where, in the Ministry's view, a water or sewer line is vulnerable because of its depth, location in the highway right-of-way, etc., the Ministry may require special protective measures.

b) The onus is on the water or sewer line owner to demonstrate that the design of any protective measures addresses Ministry concerns related to public safety, highway operations, and protection of highway facilities. The Ministry may require that the designs for any protective measures be approved and signed (or sealed) by a Professional Engineer who is experienced in the design of water or sewer lines and is registered in B.C. at the time a permit application is submitted to the Ministry.

c) Additional protection for water and sewer line installations may take the form of:
   i. Casings;
   ii. Reinforced concrete caps or protective slabs that are designed to meet specific site conditions (bagged concrete will not be acceptable);
   iii. Pipe with increased pipe wall thickness or strength which is designed to withstand higher than normal loads; or
   iv. Increased depth of cover.

a) If casings are used, they must extend across the full width of the highway right-of-way. Casings shall be designed to have a lifespan greater than or equal to that of the carrier pipe.

b) Protective measures for water and sewer lines provide for the following benefits:
   i. Casings allow for the removal and/or replacement of a ruptured or broken carrier pipe without the need for excavation of the roadway;
   ii. Casings and other protective measures help prevent spills and leaks within the highway right-of-way and surrounding environment; and
   iii. Casings and other protective measure help protect water and sewer lines from external loads and from accidental strikes due to highway operations and maintenance activities, and activities performed on highway right-of-way by third parties.

18.6 Appurtenances

18.6.1 Conformity with Clear Zone

a) Any aboveground object and appurtenances must meet the Ministry's clear zone policies (see Chapter 19.4.3).

18.6.2 Aboveground Markers

a) Aboveground markers are not required for water and sewer lines.

18.6.3 Underground Markers

a) Non-metallic pipe must be marked by underground markers or tracer wire which makes it possible to locate the pipe using electronic pipe location equipment.

18.6.4 Vent Standpipes

a) Where cased crossings are installed, or where vents are otherwise required, vent standpipes must be located and installed in such a way that they do not interfere with highway right-of-way maintenance and are not concealed by vegetation.

b) The preferred location for vent standpipes is as close as possible to the edge of the highway right-of-way.

c) Where they are required, vent standpipes shall:
   i. Be connected 30 cm from the ends of the casing;
   ii. Be no less than 5 cm in diameter; and
   iii. Extend at least 1.2 m above the ground surface, and the top of each vent standpipe shall be fitted a with a turn-down elbow, properly screened to prevent water from entering the casing.

18.6.5 Drains

a) Drains are required for casings on water and sewer lines.

b) Drains may outfall only into facilities and locations approved by the Ministry, and/or by other government agencies having regulatory authority.

18.6.6 Valves

a) Valves are mechanical devices used to control the flow of pipe contents. The location of valves within highway right-of-way is subject to approval by the Ministry.

b) Valves must be installed underground and clear of the highway prism, intersections, and driveways. Valves must also be located in such a way that they will not interfere with highway operations and maintenance.

18.6.7 Manholes

a) Manholes should be located outside of the highway prism and as close to the edge of the highway right-of-way as possible.

b) Manholes which are located within the clear zone must be at ground level or be designed in such a way that they do not create an obstacle.

c) In both urban and rural areas where the posted speed is greater than 60 km/h, manholes must not be installed in the pavement, on shoulders or in medians.

d) Manholes may be located in the pavement in urban areas, provided:

i. They are not in the wheelpath;

ii. There are two or more lanes in each direction; and

iii. The posted speed is 60 km/h or less.

18.6.8 Cathodic Protection

a) Cathodic protection will be installed at locations and in such a manner that preclude damage to bridges, reinforced concrete structures, and other highway structures and facilities.

18.7 Location Templates

18.7.1 General Location Template Information

a) The following location templates depict locations for water and sewer lines proposed to be installed within and parallel to highway right-of-way. The templates are to be used as visual guides for Ministry staff and utility organizations and are not meant to be a replacement of the policies and standards noted elsewhere in this manual.

b) The templates are based on ideal conditions and show a progression of the Ministry's preferred locations for water and sewer lines within and parallel to the highway right-of-way.

18.7.2 Location Templates 1, 2, and 3 – Fill

a) Location Template 1 – Water and sewer lines installed within 2 m of the edge of the right-of-way. Generally acceptable if all other standards are met.

b) Location Template 2 – Water and sewer lines installed within 5 m of the edge of right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Template 1;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

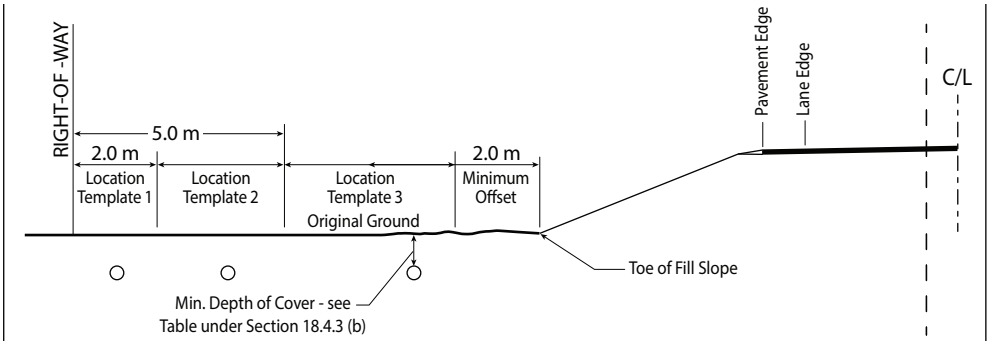
iii. All other standards are met.

c) Location Template 3 – Water and sewer lines installed between a point that is 2 m beyond the toe of a slope and a point that is 5 m from the edge of the right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Templates 1 or 2;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

iii. All other standards are met.



18.7.3 Template 1, 2, and 3 - Cut

a) Location Template 1 – Water and sewer lines installed within 2 m of the edge of the right-of-way. Acceptable if all other standards are met.

b) Location Template 2 – Water and sewer lines installed within 5 m of the edge of right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Template 1;

ii. The installation will not have an adverse effect on highway maintenance, safety, or operations; and

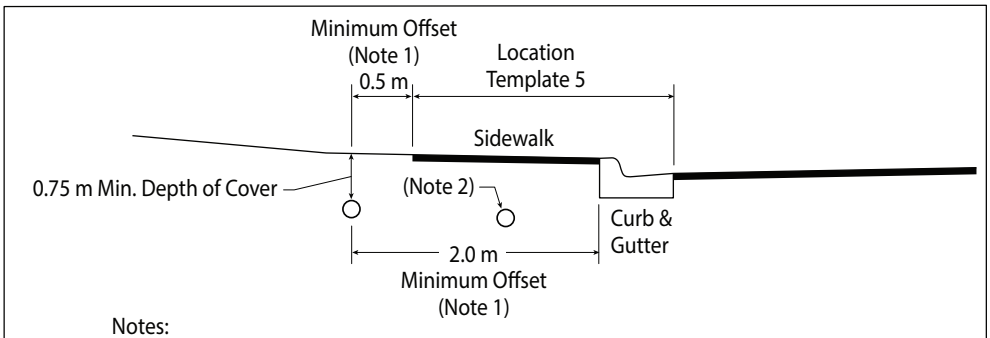
iii. All other standards are met.

c) Location Template 3 – Water and sewer lines installed between a point that is 2 m beyond the back of a ditch and a point that is 5m from the edge of the right-of-way. Generally acceptable if:

i. It is not possible or impractically expensive to comply with Location Templates 1 or 2;

ii. The installation will not have an adverse effect on highway maintenance, safety, or operations; and

iii. All other standards are met.



Notes:

1. Preferred location: minimum offset is generally 2 metres from the outside edge of the curb or 0.5 metres beyond the back of sidewalk, whichever is greater.
2. An exception may be granted for installation below sidewalks or curb & gutter.

18.8 Location Templates by Exception

18.8.1 General Exception Template Information

a) The following utility location templates depict locations within highway right-of-way which are only allowed by exception by the District Manager (or designate) in consultation with applicable engineering discipline(s) and/or other subject matter experts (see Chapter 27).

b) The District Manager may require that the water or sewer line design includes protective caps, increased depth of cover, or other measures which are approved and signed (or sealed) by a Professional Engineer who is experienced in pipeline design and is registered in B.C. at the time a permit application is submitted to the Ministry.

18.8.2 Template 4 – Under Ditches

a) No water or sewer lines are permitted under ditch slopes or ditch bottoms except for crossings. An exception may be granted by the District Manager (or designate) where:

i. The line is a sewer line or low-pressure water line;

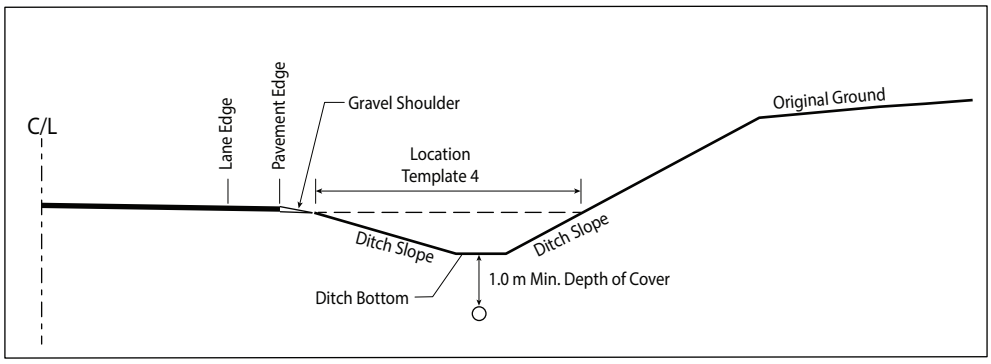
ii. Alternate locations (including locations outside the highway right-of-way) are not feasible because physical constraints (such as rock cuts or environmentally sensitive sites or conditions) make it impossible or extremely impractical to comply with other approved locations, and an installation outside the highway right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

iii. The Ministry is not planning construction which would change the location or elevation of the ditch;

iv. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

v. The installation will not have an adverse effect on highway or ditch maintenance, safety or operations;

vi. The top of the water or sewer line or casing is at least 1 metre below the hard bottom of the ditch or, if that depth of cover is not attainable, the depth of cover is at least 600 millimetres and the water and sewer line is protected by a concrete cap of a design that is acceptable to the District Manager; and



vii. All other policies and standards will be met.

18.8.3 Template 5 – Under Sidewalks

a) No water or sewer lines are permitted under sidewalks except for crossings. An exception may be granted by the District Manager (or designate) where:

i. The line is a sewer line or low-pressure water line;

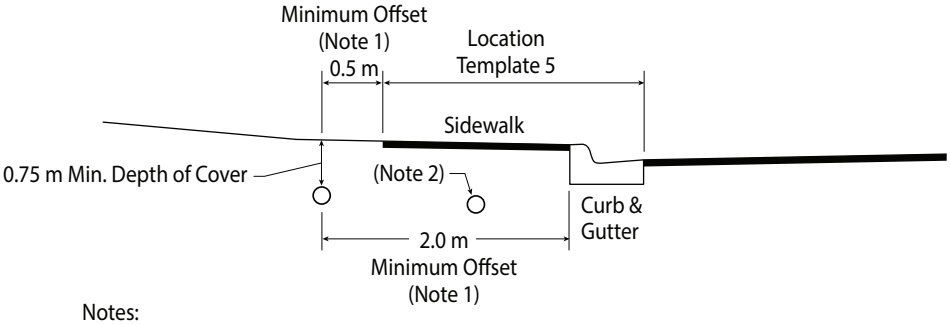
ii. Alternate locations (including locations outside the highway right-of-way) are not feasible because physical constraints (such as rock cuts or environmentally sensitive sites or conditions) make it impossible or extremely impractical to comply with other approved locations, and an installation outside the highway right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

iii. The Ministry is not planning construction which would change the location or elevation of the curb, gutter or sidewalk;

iv. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

v. The installation will not have an adverse effect on highway maintenance, safety or operations; and

vi. All other standards will be met.



Notes:
1. Preferred location: minimum offset is generally 2 metres from the outside edge of the curb or 0.5 metres beyond the back of sidewalk, whichever is greater.
2. An exception may be granted for installation below sidewalks or curb & gutter.

18.8.4 Template 6 – Under Shoulders

a) No water or sewer lines are permitted under shoulders or other locations within the roadway (including traveled lanes, parking lanes, boulevards) except for crossings. An exception may be granted by the District Manager (or designate) where:

i. The line is a sewer line or a low-pressure water line;

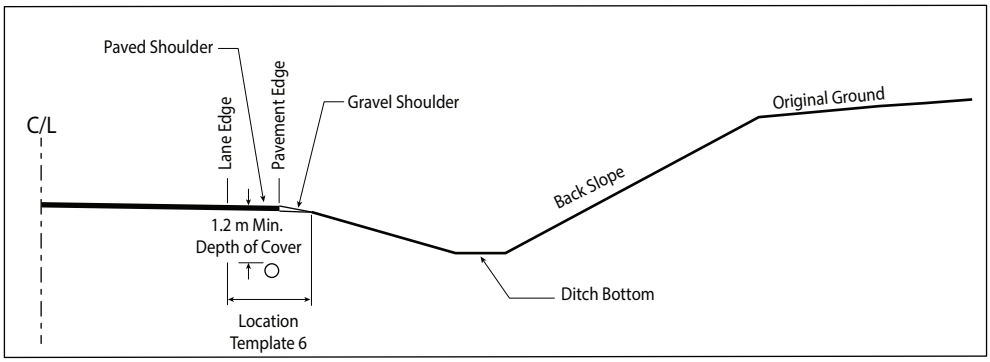
ii. Alternate locations (including locations outside the highway right-of-way) are not feasible because physical constraints (such as rock cuts or environmentally sensitive sites or conditions) make it impossible or extremely impractical to comply with other approved locations, and an installation outside the highway right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

iii. The Ministry is not planning construction which would change the location or elevation of the shoulder or profile of the roadway;

iv. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

v. The installation will not have an adverse effect on highway maintenance, safety or operations; and

vi. All other standards will be met.



19. OVERHEAD POWER AND COMMUNICATIONS POLICIES AND STANDARDS

References

Legislation:

- Telecommunications Act (Canada)
- Utilities Commission Act
- Workers Compensation Act
  - Occupational Health and Safety Regulation

Other Documents and Sources:

- B.C. Supplement to TAC Geometric Design Guide (Section 620 – Roadside Safety)
- Protocol Agreements (not viewable externally)
- Technical Circular T-03/14 – Update to the Ministry of Transportation and Highways Utility Policy Manual (1995) for Overhead High Voltage Transmission Lines
- Technical Circular T-12/94 – Single Pole Line Policy

19.1 Description of Utilities Included in this Chapter

a) The policies and standards within this chapter apply to all overhead power and communications pole lines within highway right-of-way, including:
   i. Electric power pole lines (distribution and transmission);
   ii. Fibre optic cables; and
   iii. Other communications cables.

b) This chapter separates electric power pole lines into the following categories:
   i. Distribution voltages rated at less than 69 kV nominal voltage; and
   ii. Transmission voltages rated at or above 69 kV nominal voltage.

19.2 Regulation by Other Authorities

a) Most electric power utilities in British Columbia are regulated by the British Columbia Utilities Commission (BCUC) pursuant to the Utilities Commission Act and associated regulations.

b) Telecommunications utilities are regulated by the Canadian Radio-television and Telecommunications Commission under the federal Telecommunications Act and associated regulations.

19.3 Location Policies

19.3.1 Prohibited Locations Within Highway Right-of-Way

a) Locations within the highway right-of-way where overhead pole lines are prohibited include:
   i. Within and parallel to freeways and expressways except in areas adjacent to and outside frontage roads;
   ii. Crossings of freeways and expressways unless for a power transmission line rated at 138 kV or greater;
   iii. At the base of or on rock/soil slopes where a utility installation would pose a hazard to Ministry maintenance operations; and
   iv. Within a median or raised island.

19.3.2 Unsuitable Locations Within Highway Right-of-Way

a) Certain factors or conditions may make sections of highway right-of-way unsuitable for overhead power and telecommunications pole line installations. Exceptions require the approval from the District manager (or designate). Consultation with Ministry engineering staff and/or other subject matter experts may also be required:

b) Unsuitable locations within highway right-of-way that must be avoided include:

i. Locations near bridge footings, culverts, and retaining walls;

ii. Locations where poles, lines, or cables would obscure or interfere with existing or planned installation of luminaires, traffic signals, signs, ITS infrastructure, or other highway facilities;

iii. Locations of marginal slope stability and/or other problematic soil or rock conditions;

iv. Locations of known avalanche risk;

v. Scenic look-out areas, scenic vistas, and historical sites;

vi. Locations that would interfere with visibility sight lines at intersections;

vii. Locations which conflict with the Ministry's Single Pole Line Policy (see chapter 19.3.4);

viii. Locations where there is planned improvement or expansion of the highway;

ix. In ditches or other locations which would negatively impact highway drainage;

x. Locations at the beginning of a curve in line with the tangent on the approach;

xi. Locations within the clear zone; and

xii. Locations where Ministry staff deem the installation of utility infrastructure could compromise highway safety, maintenance, or operations.

19.3.3 Location of Pole Lines Along Highway Right-of-Way

a) Pole lines shall be aligned parallel to the highway centreline and within 2 m of the boundary of the highway right-of-way.

b) Where the highway right-of-way boundary is irregular, or where other limiting factors exist, the Ministry may consider a reasonable alignment that does not comply with the 2 m alignment standard if all the following conditions are met:

i. Poles can be located outside of the clear zone;

ii. There is no impact to back slopes, drainage systems or other improvements, or the operation and maintenance of the highway;

iii. Poles will not interfere with the visibility sight lines at intersections; and

iv. Poles will not unduly interfere with future highway expansion or improvements.

19.3.4 Single Pole Line Policy

a) The Ministry has adopted a shared support structure policy, commonly referred to as the "single pole line policy," as a means to safely accommodate as many utilities which serve the public interest within limited highway right-of-way. The information below is a summary of the overall policy. For more information, see Technical Circular T-12/94 – Single Pole Line Policy.

b) The single pole line policy means that the Ministry will not generally allow more than one pole line within and parallel to the highway right-of-way.

c) The single pole line policy applies to all classes of highway where overhead poles lines have not been otherwise prohibited.

d) The single pole line policy does not apply to overhead service connections where additional poles are required to serve adjacent properties.

e) The single pole line policy applies to the first power pole line that is permitted. Subsequent installations (including telecommunications installations) or replacements must make use of the existing power pole line.

f) During highway expansion and improvement projects, multiple pole lines must be consolidated where possible to do so.

19.3.5 High Voltage Transmission Lines

a) The Ministry has determined that overhead high voltage transmission lines up to a maximum of 287 kV can be accommodated within and parallel to highway right-of-way as per policies and standards outlined in Technical Circular T-03/14.

b) Due to the long-term impact to the highway right-of-way and extremely high costs if relocations are required, applications for high voltage transmission lines must be reviewed and approved at the following authority levels:

   i. New transmission lines rated at 69 kV within and parallel to highway right-of-way require Regional Executive Director approval in consultation with the Office of the Chief Engineer; and

   ii. New transmission lines rated above 69 kV within and parallel to highway right-of-way require the same approvals as in (i), plus additional approval from the Deputy Minister.

19.3.6 Attachments to Ministry Structures

a) Proposed attachments to Ministry bridges or other structures must follow the policies and standards in Chapter 26.

19.4 Technical Standards

19.4.1 Crossings

a) Overhead power and telecommunications pole lines must cross the highway right-of-way at an angle as close to 90° as practicable.

b) Overhead power and telecommunications pole lines proposed to cross the highway right-of-way at an angle less than 70° will be considered at the discretion of Ministry staff. Additional justification from the utility organization may be required.

c) Overhead power and telecommunications pole lines proposed to cross the highway right-of-way at an angle less than 45° will be considered an exception and requires approval from the District Manager (or designate). Additional justification from the utility organization is required.

d) Priority shall be given to installing fewer poles within the highway right-of-way and meeting clear zone requirements than meeting crossing angles. See Chapter 19.4.3 for clear zone information.

e) Diagonal crossings of intersections are not permitted.

19.4.2 Offsets

a) On open shoulder highways, power and telecommunication poles, guy wires, anchors, stub poles and related facilities shall comply with the clear zone policies and standards in Chapter 19.4.3 below and these minimum offsets in order of preference:

   i. Minimum 2 m beyond the top of a cut;

   ii. Minimum 3 m beyond lowest ditch point; or

   iii. Minimum 3 m beyond toe of fill.

b) New power and telecommunication poles, guy wires, anchors, stub poles and related facilities which are installed on curb and gutter sections must conform with clear zone standards as defined in Chapter 19.4.3.

c) Due to the possibility of electrical interference and engineering design factors, the minimum horizontal offset from the highway for power transmission lines at or greater than 69 kV will be determined on a case-by-case basis as per the policies and standards outlined in Technical Circular T-03/14. Clear zone standards as defined in Chapter 19.4.3, however, must always be maintained.

d) The minimum offset for utility installations in proximity to bridges, tunnels, retaining walls, and other Ministry structures will be determined on a case-by-case basis by Ministry Structural Engineering staff.

e) The minimum clearance from power lines in proximity to signs, traffic signals, and street lighting is dependent on the voltage of the power line as shown in Table 19-1 below. Where more stringent minimum clearances are set by regulators, legislation, or industry, the more stringent clearances apply.

Table 19-1: Minimum Clearance from Electric Power Lines in Proximity to Signs, Traffic Signals, and Street Lighting

Voltage (Phase to Phase)	Minimum Horizontal and Vertical Clearance (metres)
0 V – 750 V	1.0*
751 V – 75 kV	3.0*
76 kV – 250 kV	4.6
251 kV – 550 kV	6.1

* Additional clearance required for maximum conductor swing

Note: These clearances are based on Part 19 – Electrical Safety of the Occupational Health and Safety Regulation under the Workers Compensation Act.

f) The Ministry will not prescribe minimum clearances from other utilities. Clearances must be in accordance with legislation, industry, Canadian Standards Association, and/or regulator standards.

19.4.3 Clear Zone

a) The clear zone is a defined area beyond the lane edge intended for the safe use of errant vehicles, and which must therefore be kept clear of all aboveground obstacles such as overhead poles, guy wires, anchors, etc. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area.

b) Clear zone width depends on several factors, including: class of highway, design speed, whether the aboveground object is being installed on a cut or fill section, and the steepness and height of the cut or fill slope. It is important to recognize that clear zone requirements for a particular case depends on the highway design details.

c) Clear zone standards are part of several standards related to the location of aboveground utility infrastructure within highway right-of-way, and conformance with clear zone requirements does not eliminate the need to conform with other standards. For example, compliance with clear zone standards does not eliminate the need to locate utilities within 2 metres of the edge of right-of-way wherever possible.

d) Conformance with clear zone standards is required for:

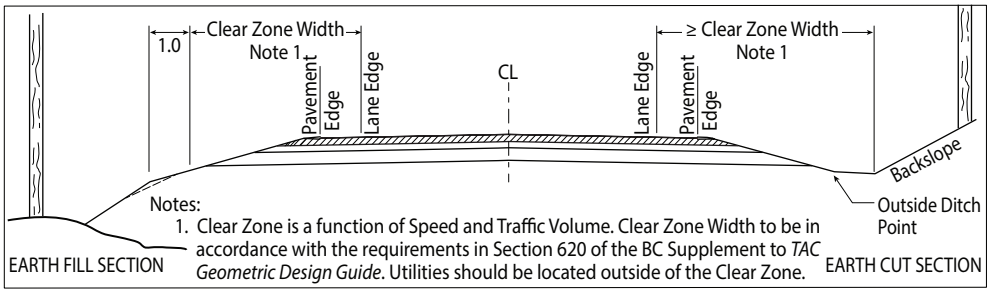
   i. The installation of all new aboveground utility infrastructure, including overhead power and telecommunications pole lines;

   ii. The relocation of all existing aboveground utility infrastructure, including overhead power and telecommunications pole lines, as part of a highway expansion or improvement project; and

   iii. The rebuilding or replacement of existing aboveground utility infrastructure, including overhead power and telecommunications pole lines, as part of routine maintenance by the utility organization.

e) Clear zone standards shall be in accordance with Section 620 of the B.C. Supplement to TAC Geometric Design Guide. For assistance with clear zone application, Ministry staff may consult their Regional Highway Design office.

Figure 19-1: Clear Zone



f) For rural highways with a posted speed greater than 60 km/h , clear zone setbacks shall be in accordance with Tables 620.A and 620.B of the B.C. Supplement to TAC Geometric Design Guide. All distances must be measured from the outer edge of the traveled lane. These tables can also be found in Appendix B of this manual.

g) For urban highways with a posted speed of 60 km/h or less, clear zone setbacks are as follows:

   i. Minimum 4.0 m from the outer edge of the traveled lane on urban highways with an open ditch; and

   ii. Minimum 0.3 m behind the sidewalk (if there is one) or a minimum of 2 m from the outside face of the curb, whichever is greater.

h) On low volume roads with an average daily traffic (ADT) not exceeding 200, clear zone setbacks are as follows:

   i. Aboveground installations must be placed within 2 m of the highway right-of-way boundary or 3 m from the toe of fill, whichever gives the greater setback from the lane edge.

   i) Where overhead poles are being replaced as part of a routine maintenance program (from 3 to 5 permitted poles in consecutive sequence depending on the clauses of any applicable Protocol Agreements), the clear zone setback for the existing permitted pole line can be used. If replaced poles require the installation of new guy wires, anchors, or other aboveground supports, such installations must meet current clear zone standards or be protected by barrier.

19.4.4 Vertical Clearances

a) The minimum vertical clearance for overhead power lines or telecommunications cables crossing the highway right-of-way is measured from the line under conditions of maximum sag (e.g. caused by electrical loads or ice) to the highest point of the highway right-of-way directly below.

b) The minimum vertical clearance for power lines or telecommunications cables installed within and parallel to the highway right-of-way is measured from the line under conditions of maximum sag (e.g. caused by electrical loads or ice) to the highest point of the ground directly below.

c) Minimum vertical clearances apply to any point of the overhead line span within highway right-of-way, and therefore allowances must be made for road elevation and topography variations.

d) Overhead electric power lines and telecommunications cables must not obstruct the visibility of traffic control signals or overhead advisory signs.

e) The minimum vertical clearance for telecommunication cables, whether on poles permitted directly to that same telecommunications company or on jointly-owned poles permitted to another utility organization, are as shown in Table 19-2 below. Where more stringent minimum vertical clearances are set by regulators, legislation, or industry, the more stringent clearances apply.

Table 19-2: Minimum Vertical Clearance for Telecommunications Cables

Location	Minimum Clearance (metres)
Crossing freeways and expressways*	5.5
At signalized intersections or intersections likely to be signalized within the next ten years	5.5
In locations where a lower vertical clearance may interfere with highway operations or maintenance as determined by the District Manager (or designate)	6.1
Other locations within highway right-of-way	5.0

*Overhead crossings of freeways and expressways may only be approved by exception (see Chapter 27) and must be avoided whenever possible.

f) The minimum vertical clearances above the ground surface or from the pavement crown for overhead power distribution lines are shown in Table 19-3 below. Where more stringent minimum vertical clearances are set by regulators, legislation, or industry, the more stringent clearances apply.

Table 19-3: Minimum Vertical Clearance for Overhead Power Distribution Lines

Overhead Power Distribution Lines Voltage Class (Phase to Ground)	Minimum Vertical Clearance (metres)
0 - 750 V	6.1
751 V - 22,000 V	6.7
22,001 V - 50,000 V	7.6

Note: These clearances up to 22,000 V are consistent with BC Hydro distribution standards document ES43 B1-03.

g) The minimum vertical clearances for overhead electric power transmission lines crossing the highway right-of-way are shown in the table below. Where more stringent minimum vertical clearances are set by regulators, legislation, or industry, the more stringent clearances apply.

Table 19-4: Minimum Vertical Clearance for Electrical Transmission Lines Crossing Highways

Overhead Electric Power Transmission Lines (Phase to Phase)	Minimum Vertical Clearance (metres)
69 kV	9.6
138 kV	9.9
230 kV	10.5
287 kV	10.9
345 kV	11.2
500 kV	14.2

Note: These clearances do not allow for future underbuilding.

19.5 Protective Measures

a) The onus is on the utility organization to ensure all aboveground installations, including overhead power and telecommunications poles, meet the Ministry's clear zone requirements as outlined in Chapter 19.4.3. Where this is not possible or practical, the District Manager (or designate) may permit utility organizations to install aboveground utility infrastructure within the clear zone if it is adequately protected by:

   i. Being placed behind existing guardrails, barriers, retaining walls, or other similar protection; or

   ii. Being placed behind guardrails, barriers, or other suitable protection approved by the Ministry and installed by the utility organization at the utility organization's sole cost.

b) Any guardrails, barriers, or other protective measures installed by the utility organization must meet Ministry standards and be approved and signed (or sealed) by a Professional Engineer who is registered in B.C.

c) Even if clear zone requirements can be met, Ministry staff may require additional measures to protect against hazards presented by aboveground utility installations such as power and telecommunications poles. These additional protective measures may include (but are not limited to):

   i. Requiring that aboveground utility installations be located where they are least likely to be hit by an errant vehicle (e.g. by locating them on the inside of a curve rather than the outside, or on a minor street with lower traffic volumes);

   ii. Requiring that aboveground utility installations be located on the cut side of the highway right-of-way rather than the fill side; and

   iii. Requiring that aboveground utility installations at or near intersections or other points of traffic conflict be located to minimize the risk of secondary collisions (e.g. not on the likely trajectory of vehicles involved in 2-vehicle collisions).

19.6 Appurtenances

19.6.1 Guy Wires and Anchors

a) Guy wires, anchors, push braces, push poles or other similar appurtenances must not be placed within the clear zone, medians, traffic islands or other prohibited or unsuitable locations within the highway right-of-way.

19.7 Location Templates

19.7.1 General Location Templates Information

a) The following location templates depict locations for power and telecommunication poles within highway right-of-way. These templates are to be used as visual guides for Ministry staff and utility organizations and are not meant to be a replacement of the policies and standards noted elsewhere in this manual.

b) The templates are based on ideal conditions and show a progression of the Ministry's preferred locations for power and telecommunications poles within highway right-of-way.

19.7.2 Location Templates 1, 2, and 3 - Fill

a) Location Template 1 – Pole lines installed within 2 m of the edge of the right-of-way. Generally acceptable if all other standards are met.

b) Location Template 2 – Pole lines installed within 5 m of the edge of the right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Template 1;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

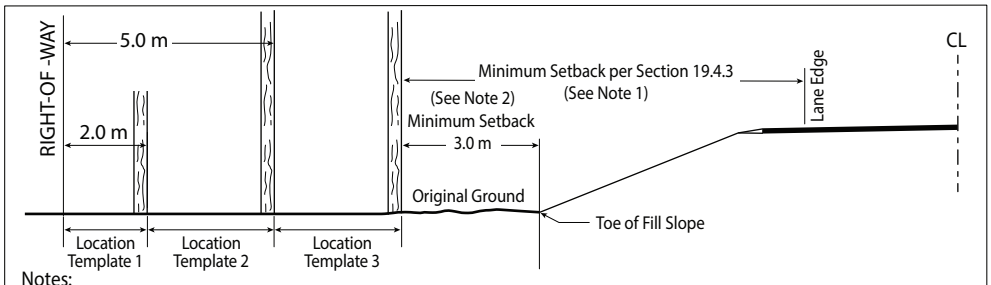
iii. All other standards are met.

c) Template 3 – Pole lines installed between a point that is 3 m beyond the toe of a slope and a point that is 5 m from the edge of the right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Templates 1 or 2;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

iii. All other standards are met.



Notes:

1. If the minimum setback distance specified in the Table in Section 19.4.3 results in a location closer than 3 m beyond the toe of fill, the pole should be placed at least 3 m beyond the toe of fill slope.
2. If the pole is placed closer than 3 m beyond the toe of fill slope, then roadside barriers shall be installed in accordance with the guidelines set out in Section 19.5 (f).

19.7.3 Templates 1, 2, and 3 – Cut

a) Location Template 1 – Pole lines installed within 2 m of the edge of the right-of-way. Generally acceptable if all other standards are met.

b) Location Template 2 – Pole lines installed within 5 m of the edge of the right-of-way. Generally acceptable if:

   i. It is not possible to comply with Location Template 1;

   ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

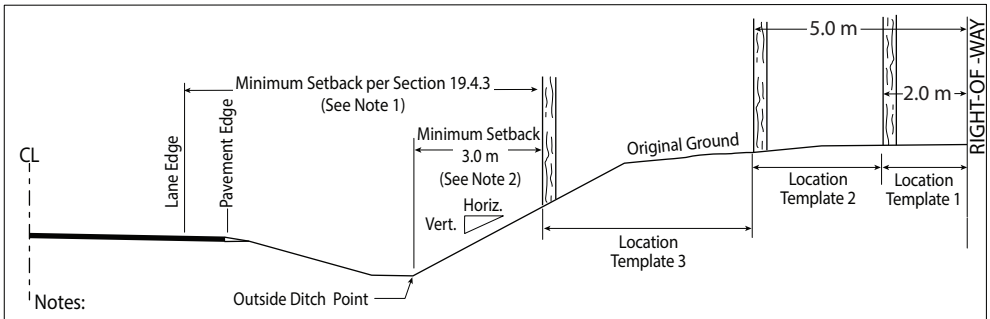
   iii. All other standards are met.

c) Location Template 3 – Pole lines installed between a point that is 3 m beyond the back of a ditch and a point that is 5 m from the edge of the right-of-way. Generally acceptable if:

   i. It is not possible to comply with Location Templates 1 or 2;

   ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

   iii. All other standards are met.



Notes:

1. For backslopes of 3:1 (Horiz:Vert) or flatter, if the minimum setback distance specified in Section 19.4.3 results in a location closer than 3 m beyond the outside ditch point, the pole should be placed at least 3 m beyond the outside ditch point.
2. For backslopes steeper than 3:1 (Horiz:Vert), the minimum setback should be 3 m beyond the outside ditch point.
3. If the pole is placed closer than 3 m beyond the outside ditch point, then roadside barriers shall be installed in accordance with the guidelines set out in Section 19.5 (f).

20. UNDERGROUND POWER & COMMUNICATION LINES POLICIES AND STANDARDS

References

Legislation:

- Utilities Commission Act
- Telecommunications Act

Other Documents and Sources:

- Master Use Agreements (not viewable externally)
- Protocol Agreements (not viewable externally)
- Technical Circular T-12/94 – Single Pole Line Policy

20.1 Description of Utilities Included in this Chapter

a) The policies and standards within this chapter apply to all underground cable, including:
   i. Electric power lines (distribution and transmission voltages);
   ii. Fibre optic cable; and
   iii. Any other communications cable.

b) This chapter separates underground power lines into the following categories:
   i. Distribution voltages rated at less than 69 kV nominal voltage; and
   ii. Transmission voltages rated at or greater than 69 kV nominal voltage.

20.2 Regulation by Other Authorities

a) Electric power facilities are provincially regulated by the British Columbia Utilities Commission (BCUC) under the Utilities Commission Act and associated regulations.

b) Telecommunications facilities are federally regulated by the Canadian Radio-television and Telecommunications Commission (CRTC) under the federal Telecommunications Act and associated regulations.

20.3 Location Policies

20.3.1 Prohibited Locations Within Highway Right-of-Way

a) Locations within the highway right-of-way where underground power and communications lines are prohibited include:
   i. Installations within and parallel to freeways and expressways;
   ii. Installations in culverts or other drainage structures.

20.3.2 Unsuitable Locations Within Highway Right-of-way

a) Certain factors or conditions may make sections of the highway right-of-way unsuitable for underground power and communications installations. These locations must be avoided. Exceptions require the approval of the District Manager (or designate). Consultation with Ministry engineering staff and/or other subject matter experts may also be required.

b) Unsuitable locations within highway right-of-way that must be avoided include:
   i. Installations near or in high embankments or rock cutslopes (due to risk of settlement);

ii. Installations in close proximity to bridge footings, culverts and retaining walls (due to risk of erosion and instability in the event of failure);

iii. Locations where soil or other conditions make it difficult to maintain full depth cover;

iv. Locations having marginal slope stability or problematic soil or rock conditions;

v. Under ditch slopes or ditch bottoms for underground power or communications installations within and parallel to the highway;

vi. Locations where there is planned expansion of the highway;

vii. Locations that would interfere with existing or the planned future installation of luminaires, traffic signals, signs, ITS infrastructure, or other highway facilities; and

viii. Locations where Ministry staff deem the installation compromising to the highway integrity.

20.3.3 Underground Power and Communication Lines Within and Parallel to Highway Right-of-Way

a) Underground power and communication lines shall be aligned parallel and within 2 m of the boundary of the highway right-of-way.

b) The Ministry may consider a reasonable alignment for underground power and communication lines within and parallel to highway right-of-way that does that not comply with the 2 m alignment standard if all the following conditions are met (see Chapter 20.7 for more information):

i. The highway right-of-way is irregular;

ii. There is no impact to backslopes, drainage systems or other improvements, or the operation and maintenance of the highway; and

iii. The alignment of the underground power or communication line meets clearance requirements from the highway prism.

20.3.4 Underground Power and Communication Lines Within the Roadway

a) Longitudinal installations within the roadway (which may include traveled lanes, parking lanes, sidewalks, boulevards, medians, and shoulders) are only allowed by exception and will only be considered for distribution voltage power lines and communication lines. See Chapter 27 and Chapter 20.8 for more information.

20.3.5 Single Pole Line Policy

a) The Ministry has adopted a shared support structure policy, commonly referred to as the "single pole line policy," as a means to safely accommodate as many utilities which serve the public interest within limited highway right-of-way. For more information, see Technical Circular T-12/94 – Single Pole Line Policy.

b) Prior to a new underground electrical or communication installation being considered by Ministry staff, there must first be an attempt by the utility organization to share existing structures, whether overhead (e.g. poles) or underground (e.g. conduit), including those owned by other utility organizations.

c) The single pole line policy applies to all classes of highway.

20.3.6 Attachment to Ministry Structures

a) Installations proposed to be attached to Ministry bridges or other structures must follow the policies and standards in Chapter 26.

20.3.7 Installation Within Ministry-Owned Conduit

a) Installing fibre optic cables within Ministry-owned conduit requires that the utility organization has a valid Master Use Agreement. Master Use Agreements are administered by the Ministry's Utilities Services group. See Chapter 22 for more information.

b) Permit applications for installing fibre optic cables within Ministry-owned must be reviewed by the Ministry's Electrical and ITS Engineering group.

20.4 Technical Standards

20.4.1 Crossings

a) Underground power and communication lines must cross the highway right-of-way at an angle as close to 90° as practicable.

b) Underground power and communication line crossings proposed at less than 70° will be considered at the discretion of Development Services staff. Additional justification from the utility organization may be required.

c) Underground power and communication line crossings proposed at less than 45° will be considered an exception and requires approval by District Manager (or designate). Additional justification from the utility organization is required.

d) Diagonal crossings of intersections are not permitted.

e) Underground power and communication lines crossing the highway right-of-way must be installed by trenchless methods unless an exception is approved by the District Manager (or designate) and be done in accordance with the policies and standards in Chapter 25.

20.4.2 Offsets

a) For underground power and communication lines within and parallel to the highway right-of-way in rural areas, the minimum offset from the highway prism is 2 m beyond either the toe of a fill slope or the top of a cut slope.

b) For underground power and communication lines within and parallel to the highway right-of-way in urban areas, the minimum offset from existing curb and gutter is 2 m beyond the outside edge of the curb.

c) The minimum offset from bridges and other Ministry structures, including culverts greater than 3 m in diameter, will be determined on a case-by-case basis by Ministry Structural Engineering staff.

d) The minimum offset for underground power and communications lines from culverts less than 3 m in diameter and signs is 0.5 m.

e) The Ministry will not prescribe minimum clearances from other utilities. Clearances from other utilities must be in accordance with the governing industry, Canadian Standards Association, or regulator standards.

20.4.3 Depth of Cover

a) The depth of cover standards listed are minimums. Ministry staff may require increased depth of cover where conditions warrant. An example is under ditches where there is a possibility that ditch depth will be increased by scour, maintenance operations, or the need to increase ditch capacity.

b) Depth of cover differs based on location and type of cable, and is measured from the surface to the top of the conduit, duct, casing or cable, as shown in Table 20-1 below:

Table 20-1: Depth of Cover for Underground Power and Communication Lines

Cables	Under Pavement and Shoulders	Design Ditch Bottom	Elsewhere in the Right-of-Way
Electric Power Cable	1.2 m	1.0 m	1.0 m
Fibre Optic Cable	1.2 m	0.75 m	0.75 m
Other Communications Cable	1.2 m	0.75	0.75

c) Underground power and communication lines must cross the highway right-of-way at a consistent depth for the entire crossing, whilst simultaneously meeting all of the minimum depths of cover requirements outlined in Table 17-1 above.

d) The District may permit substandard depth of cover where necessary, provided that the underground power or communication line is protected by concrete slabs or other measures which provide a standard of protection equivalent to minimum depth of cover standards. Exceptions must be approved by the District manager (or designate) and will be made only in special circumstances and for short distances: Examples include:

i. Locations where the trench is to be cut in solid rock; and

ii. Locations where the presence of other utility infrastructure makes it impossible to comply with the minimum depth of cover standards.

20.5 Protective Measures

a) Where, in the Ministry's view, an underground power or communication line is vulnerable because of its depth, location in the highway right-of-way, etc., the Ministry may require special protective measures.

b) The onus is on the underground power or communication line owner to demonstrate that the design of any protective measures addresses Ministry concerns related to public safety, highway operations, and protection of highway facilities. The Ministry may require that the designs of any protective measures be approved and signed (or sealed) by a Professional Engineer who is registered in B.C.

c) Additional protection for underground power and communication line installations may take the form of:

i. Ducts;

ii. Conduit;

iii. Reinforced concrete cap (bagged concrete will not be acceptable); or

iv. Increased depth of cover.

d) Underground power and communication lines must be protected by ducts, conduits, or concrete slabs in the following situations:
   i. For crossings of freeways, expressways, and other controlled-access highways,
   ii. Where trenched construction is not authorized;
   iii. For all power cables within highway-right-way; and
   iv. Near bridge footings, pole footings, pedestals, and other Ministry structures.

e) Conduit/ducts installed for crossings of highway right-of-way must extend at least 3 m beyond the toe of fills, the back of the ditch line, or the outside of the curb.

f) Protective measures for underground power and communication line installations provide for the following benefits:
   i. Conduits and ducts allow for the removal and/or replacement of ruptured or broken lines without the need for excavation of the roadway; and
   ii. Conduits, ducts, and concrete slabs protect power and communication lines from external loads and from accidental strikes due to highway maintenance;

g) The Ministry is not responsible for loss of service due to accidental damage caused to underground power or communication lines.

20.6 Appurtenances

20.6.1 Conformity with Clear Zone

a) Any aboveground objects and appurtenances must meet the Ministry's clear zone policies (see Chapter 19.4.3).

20.6.2 Above Ground Markers

a) Above ground markers are required in rural locations (generally where there is open drainage along the highway) for underground power and communications lines.

b) Markers must be placed at both ends of crossings at the highway right-of-way edge and at 200 m intervals for installations that run parallel within the highway right-of-way.

c) Standard markers which have been approved by the District Manager must be used. Markers must include a warning notice and the following information:
   i. Type of installation (and voltage if applicable);
   ii. Name of the operating utility organization; and
   iii. Emergency telephone number.

20.6.3 Underground Markers

a) Detectable underground markers or tracer wire must be used when non-metallic ducts or conduit is installed. The marker or tracer wire must make it possible to locate the underground line with a readily available electronic device.

b) When underground electrical or communication lines are installed by ploughing or trenching, a plastic warning tape must also be placed at a suitable depth between the ground surface and top of the line or conduit. The warning tape must be of a type, width, durability, and colour which is commonly used in the industry.

20.6.4 Manholes

a) Manholes should be located outside of the highway prism and as close to the edge of the right-of-way as possible.

b) Manholes which are located within the clear zone must be at ground level or be designed in such a way that they do not create an obstacle.

c) In both urban and rural areas where the posted speed is greater than 60 km/h, manholes must not be installed in the pavement, on shoulders or in medians.

d) Manholes may be located in the pavement in urban areas, provided:

i. They are not in the wheelpath;

ii. There are two or more lanes in each direction; and

iii. The posted speed is 60 km/h or less.

20.6.5 Pedestals

a) Pedestals, cabinets, pad-mounted transformers, or other aboveground appurtenances installed as part of underground power or communication installations must be located as close to the highway right-of-way boundary as possible and be designed to avoid impacting highway maintenance operations.

20.7 Utility Location Templates within Highway Right-of-Way

20.7.1 General Location Template Information

a) The following location templates depict locations for underground power and communications lines proposed to be installed within and parallel to highway right-of-way. The templates are to be used as visual guides for Ministry staff and utility organizations and are not meant to be a replacement of the policies and standards noted elsewhere in this manual.

b) The templates are based on ideal conditions and show a progression of the Ministry's preferred locations for underground power and communications lines within the highway right-of-way.

20.7.2 Location Template 1, 2, and 3 - Fill

a) Location Template 1 – Underground power or communication line installed within 2 m of the edge of the right-of-way. Generally acceptable if all other standards are met.

b) Location Template 2 – Underground power or communication line installed within 5 m of the edge of the highway right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Template 1;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

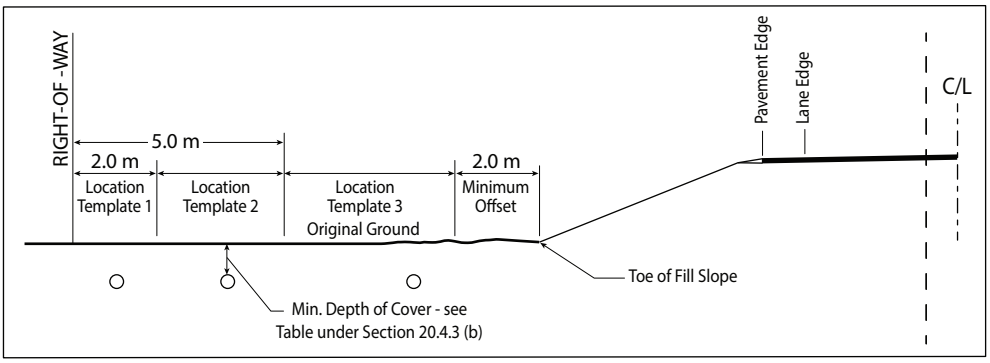
iii. All other standards are met.

c) Location Template 3 – Underground power or communication line installed between a point that is 2 m beyond the toe of a slope and a point that is 5 m from the edge of the highway right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Templates 1 or 2;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

iii. All other standards are met.



20.7.3 Location Template 1, 2, and 3 - Cut

a) Location Template 1 – Underground power or communication line installed within 2 m of the edge of the right-of-way. Generally acceptable if all other standards are met.

b) Location Template 2 – Underground power or communication line installed within 5 m of the edge of the highway right-of-way. Generally acceptable if:

i. It is not possible to comply with Location Template 1;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

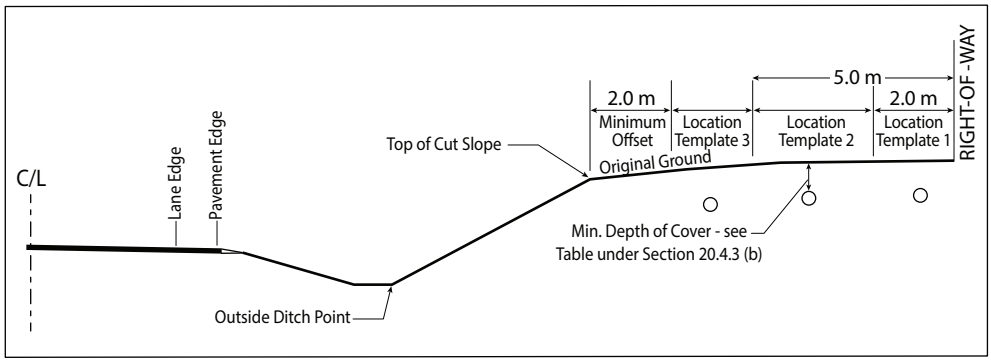
iii. All other standards are met.

c) Location Template 3 – Underground power or communication line installed between a point that is 2 m beyond the back of a ditch and a point that is 5 m from the edge of the highway right-of-way.

i. It is not possible to comply with Location Templates 1 or 2;

ii. The installation will not have an adverse effect on highway maintenance, safety or operations; and

iii. All other standards are met.



20.8 Utility Location Templates by Exception

20.8.1 General Exception Template Information

a) The following utility location templates depict locations within highway right-of-way which are only allowed by exception by the District Manager (or designate) in consultation with applicable engineering discipline(s) and/or other subject matter experts (see Chapter 27).

b) The District Manager (or designate) may require that the design of the underground power or communication line includes protective caps, increased depth of cover, or other measures which are approved and signed (or sealed) by a Professional Engineer who is registered in B.C. at the time a permit application is submitted to the Ministry.

20.8.2 Template 4 – Under Ditches

a) No underground power or communication lines are permitted under ditch slopes or ditch bottoms except for crossings. An exception may be granted by the District Manager (or designate) where:

i. The District Manager (or designate) is satisfied that physical constraints (such as rock cuts or environmentally sensitive sites or conditions) make it impossible to comply with other locations, and installation on an alignment outside the right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

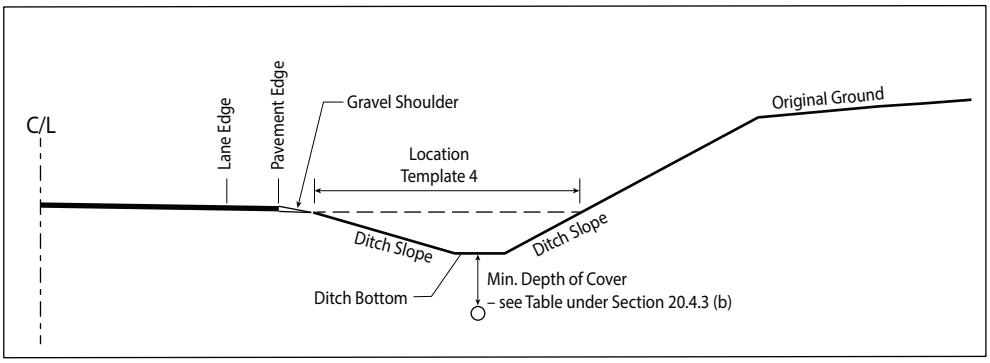
ii. The Ministry is not planning construction which would change the location or elevation of the ditch;

iii. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

iv. The installation will not have an adverse effect on highway maintenance, safety or operations and flexibility for highway improvements to meet current and future transportation needs;

v. The cable or casing is at least 1 metre below the hard bottom of the ditch or, if that depth of cover is not attainable, the depth of cover is at least 600 millimetres and the cable is protected by a concrete cap of a design that is acceptable to the District Manager; and

vi. All other standards will be met.



20.8.3 Template 5 – Under Sidewalks

a) No underground power or communication lines are permitted under sidewalks except for crossings. An exception may be granted by the District Manager (or designate) where:

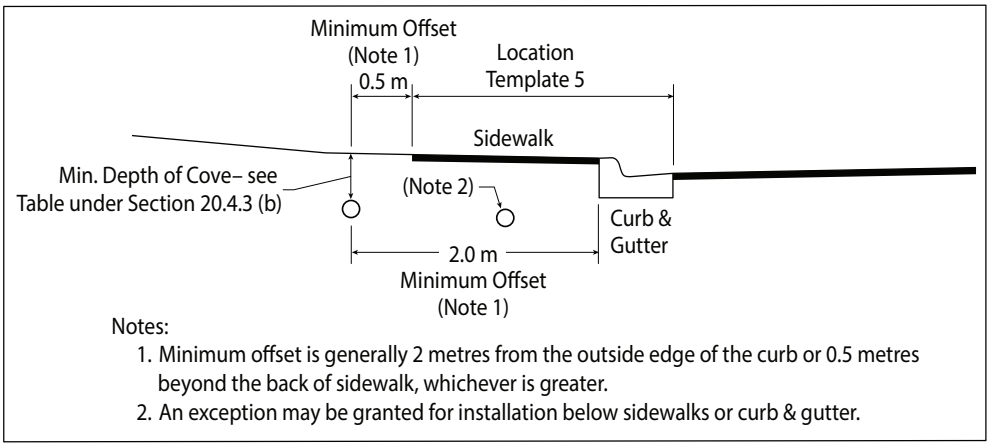
i. The District Manager (or designate) is satisfied that physical constraints (such as rock cuts or environmentally sensitive sites or conditions) make it impossible to comply with other locations, and installation on an alignment outside the right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

ii. The Ministry is not planning construction which would change the location or elevation of the curb and gutter or sidewalk;

iii. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

iv. The installation will not have an adverse effect on highway maintenance, safety or operations; and

v. All other standards will be met.



Notes:

1. Minimum offset is generally 2 metres from the outside edge of the curb or 0.5 metres beyond the back of sidewalk, whichever is greater.
2. An exception may be granted for installation below sidewalks or curb & gutter.

20.8.4 Template 6 – Under Shoulders

a) No underground power or communication lines are permitted under shoulders or other paved portions of the highway except for crossings. An exception may be granted by the District Manager, or designate, where:

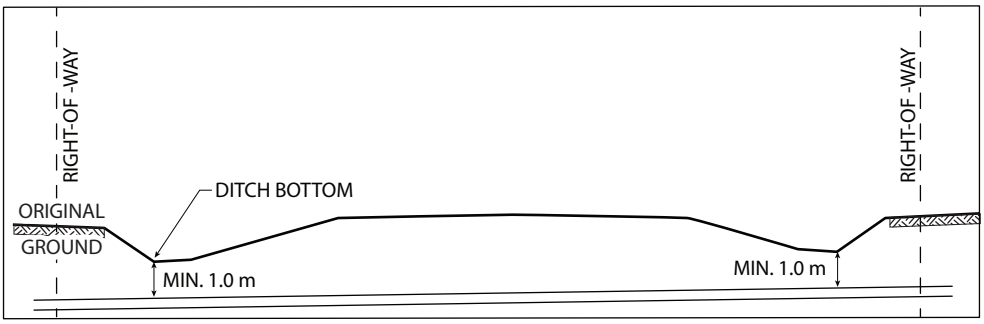
i. The District Manager (or designate) is satisfied that physical constraints (such as rock cuts or environmentally sensitive sites or conditions) make it impossible to comply with other locations, and installation on an alignment outside the right-of-way would be so hazardous, high-risk, or environmentally damaging as to not be feasible;

ii. The Ministry is not planning construction which would change the location or elevation of the shoulder;

iii. Traffic interruptions during installation and maintenance will not cause unacceptable levels of congestion, traffic delays, or hazard;

iv. The installation will not have an adverse effect on highway maintenance, safety or operations; and

v. All other standards will be met.



21. WIRELESS COMMUNICATION SITES

References

Legislation:

- Transportation Act

Other Documents and Sources:

- CPC-2-0-03 – Radiocommunication and Broadcasting Antenna Systems
- Manual of Aesthetic Design Practice
- Master Use Agreements (not viewable externally)
- Safety Code 6 - Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz (2015)

21.1 Definitions

a) The following definitions apply throughout this chapter:

i. **Equipment:** The transmission and reception antennas, apparatus, fixtures, conduits, attachments, cables, wires, shelters, cabinets, and other appurtenances and structures comprising the wireless communications Site.

ii. **Fee:** The amount payable by a wireless communications company as calculated in accordance with the terms set out in the fee schedule of the Master Use Agreement between the Ministry and a wireless communications company.

iii. **Land-use Authority:** The local body as defined by Innovation, Science, and Economic Development Canada (formerly Industry Canada) which must be consulted prior to the Ministry authorizing the establishment of a Site. Typically, the Land-use Authority is a municipality.

iv. **Master Use Agreement:** An agreement between the Ministry and a wireless communications company that outlines each party's obligations with respect to Sites, and which is in the nature of a license to allow the Ministry to charge Fees.

v. **Ministry Structure:** All buildings, bridges, tunnels, towers, poles, lighting structures, and video poles owned by the Ministry.

vi. **Purpose-built Structure:** A structure installed and subsequently owned by a wireless communications company for the primary purpose of installing wireless communications Equipment. A monopole is an example of this type of structure.

vii. **Site:** The portion of the highway right-of-way that may be designated from time to time as a location for a wireless communication company to install, maintain, and operate Equipment for the purpose of providing wireless communications services. For the purpose of this section, a Site could consist of a tower or structure used to mount antennas, with or without related Equipment located at ground level adjacent to the structure. A Site may also be a structure where several antennas are located in various locations on or in the structure but are all connected to one central cabinet or shelter. All Sites will be described with greater certainty on the plan or plans appended to each site permit.

viii. **Site Permit:** An authorization granted by the Ministry authorizing a wireless communications company to use or occupy a Site.

ix. **Sub-licensee:** A wireless communications company co-locating at an existing site permitted to a separate third wireless communications company and on a structure owned by that separate third wireless communications company.

x. **Third-party Structure:** Any structure permitted on highway right-of-way but which is owned by neither the Ministry nor a wireless communications company (e.g. BC Hydro or Fortis power pole).

21.2 Authorizations

21.2.1 Master Use Agreement Required

a) A valid Master Use Agreement (MUA) between a wireless communications company and the Ministry is required before the company can apply to place Equipment on highway right-of-way. MUAs are provincial in scope, and a wireless communication company requires only one MUA for all of its Sites on highway right-of-way.

b) The wireless communications company is required to follow all terms and conditions outlined in the Master Use Agreement.

c) Utilities Services within Ministry headquarters in Victoria is responsible for the administration of MUAs.

21.2.2 Site Permit Required

a) A site permit issued by the appropriate District is required for all wireless Sites on highway right-of-way. For a wireless communications company with more than one Site, each Site must be individually permitted.

b) District staff shall use the "Permission to Install, Maintain, and Operate Utility Works on Right of Way Lands" (H1026) form for wireless communication site permits.

c) The wireless communications company's MUA must be signed and in effect (valid) before a site permit can be issued.

d) A wireless communications company's site permit(s) is (are) valid only if the company's MUA is also valid.

e) A wireless communications company which has existing structures on highway right-of-way that are permitted for a use other than wireless communications (e.g. an overhead telecommunications pole line) must not install, operate, or maintain wireless communications Equipment on such structures without first receiving a wireless communication site permit from the applicable District.

f) A wireless communications company that wishes to materially modify an existing site, such as by changing updating/changing Equipment (e.g. increasing the number of antennas) or making changes to the structure, must apply for an amended site permit.

g) Regardless of any third party's interests or ownership of permitted structures or plant on highway right-of-way, only Ministry representatives who have the delegated authority of the Minister may authorize a wireless communication company to establish a wireless communications site on highway right-of-way.

21.2.3 Use of Existing Structures

a) As per Innovation, Science, and Economic Development Canada guidelines, wireless communication companies must first explore the option of using of existing infrastructure before building a new antenna-supporting structure. This includes potentially sharing an existing tower or other structure with another wireless communications company.

b) Wireless communication companies intending to share existing infrastructure must obtain an authorization in the form of a site permit (or amended site permit, where required) from the appropriate District (see section 21.3.3 below).

21.2.4 Sub-licensee Authorizations

a) A sub-licensee is a wireless communication company that shares an existing Purpose-built Structure already permitted by the Ministry to a different wireless communication company. There are no sub-licensees on Ministry Structures or Third Party Structures (as each party must apply for and receive its own individual permit to install Equipment on these structures).

b) The original permittee and the sub-licensee are expected to coordinate their business. However, the original permittee with the existing Site Permit for the Purpose-built Structure is responsible for working with the applicable District on all matters related to the sub-licensee. This includes responsibility to apply for an amended Site permit. No additional permits will be issued for the Purpose-built structure.

c) The sub-licensee is not required to have an MUA.

d) If the application is approved by the District, the existing site permit (held by the company that owns the Purpose-built structure) will be amended. The Sub-licensee does not receive a separate standalone site permit.

e) Schedule 2 of the site permit is dedicated for sub-licensee information, and shall include:

   i. The name and address of the Sub-licensee;

   ii. A contact name, address and phone number of the sub-licensee, as well as emergency contact information;

   iii. Description of the works at the Site; and

   iv. The number of antennas installed at the Site by the Sub-licensee.

Table 21-1: Authorization Requirements by Structure Type and Ownership

	Ministry Structure	Purpose-built Structure	Third Party Structure
Examples of Structure Type:	• Bridges • Tunnels • Lighting poles	• Monopole	• Power Poles and Towers
Owner:	• Ministry	• Wireless Communications Company	• Third Party (e.g. BC Hydro
Public Consultation Required?	• Yes	• Yes	• Yes
Authorization Requirements:	• Each wireless communications company wanting to establish a Site on this structure must have a valid MUA and receive authorization from the District through separate, individual site permits.	• The wireless communications company must have a valid MUA and applies for site permit from the applicable District to build the structure and install Equipment.	• Each wireless communications company wanting to establish a Site on this structure must have a valid MUA and receive authorization from the District through separate, individual site permits. • Permission from the structure owner is also required.
Sub-licensees	• No sub-licensees are permitted on these structures. Each company applies for its own, individual site permit.	• Sub-licensees are allowed on these structures. The wireless communications company that owns the Purpose-built Structure and has the existing site permit is responsible for working with the District on behalf of the sub-licensee. • An amended permit will be issued to the wireless communications company that owns the Purpose-built Structure and has the existing site permit	• No sub-licensees are permitted on these structures. Each company applies for its own, individual site permit.

21.3 Siting Policies

21.3.1 Highway Class

a) Except where otherwise noted, wireless communications Sites are permitted on all classes of highways provided the installation, operation, and maintenance of the Site will not interfere with safety and the use, maintenance, and operation of the highway.

21.3.2 Designs

a) All designs for wireless communication Sites, regardless of support structure, must be approved and signed/sealed by a professional engineer experienced in the design of wireless communication facilities and is registered in British Columbia at the time of the site permit application.

21.3.3 Structures

a) Wireless communication Equipment can be installed on most structures within highway right-of-way, including:

   i. Ministry Structures (e.g. bridges, tunnels, lighting poles), but only as approved by Structural Engineering on an exception basis), purpose-built structures owned by the wireless communication company (e.g. monopoles), and third party structures (e.g. BC Hydro power poles and towers) provided the Equipment will not impact the physical integrity of the structure, the safety of highway users, Ministry employees and contractors, or impede highway use, maintenance, and operations.

b) Where a Ministry Structure or Third Party Structure is used as a Site, the structure will be deemed to be a separate Site for each wireless communications company regardless of the configuration of Equipment.

21.3.4 Use of Existing Structures and Site Sharing

a) As per Innovation, Science, and Economic Development Canada guidelines (see CPC-2-0-03 – Radiocommunication and Broadcasting Antenna Systems), before building a new support structure wireless communication companies must first explore the following options:

   i. The possibility of sharing an existing structure or tower already used for wireless communications purposes; and

   ii. Locate, analyze and attempt to use any feasible existing infrastructure such as rooftops, water towers, power poles, etc.

b) The Ministry's preference is to have wireless communication Equipment on non-Ministry Structures whenever possible. The Ministry may refuse applications for use of Ministry Structures at its sole discretion and will not approve new Sites on Ministry Structures if opportunities for locating on non-Ministry Structures exist. Costs savings for the wireless communication company is not a valid reason for the company to install Equipment on a Ministry Structure versus other structures.

21.3.5 Prohibited Sites

a) Notwithstanding any other siting requirements, wireless communication Equipment is not permitted on or in:

   i. Bridges and tunnels (unless approved by Structural Engineering on an exception basis);

   ii. Pedestrian bridges or overpasses;

iii. Locations on Highway Right-of-Way that require regular maintenance or regular access by Ministry staff or contractors;

iv. Gravel pits owned and/or operated by the Ministry;

v. Any location or structure in the highway median; and

vi. Regulatory and other highway signs.

21.3.6 Access

a) Wireless communications companies must show in their applications that there is suitable access to their Site.

b) Where a Site is located on a Freeway or Expressway, access to the Site must be from a local road or adjacent frontage road, or from the inside lane of curve for an on/off ramp at an interchange if safe. Access to a Site from the outside lane of a curve for an on/off ramp at an interchange is not allowed.

c) In some cases, access to a Site may need to be through adjacent private or public property. The wireless communications company must obtain written approval from the adjacent property owner before the District will issue a site permit.

21.3.7 Utility Service Connections and Aboveground Objects

a) All utility services connecting to the wireless communications Site (e.g. electrical and communications services) will be installed underground.

b) All aboveground objects and Equipment comprising a wireless communications Site, whether temporary or permanent, must be secured and fenced with the name of the utility organization, site number, and emergency contact number located on the gate.

21.3.8 Clear Zone Requirements

a) All aboveground objects and Equipment that comprise the wireless communication Site, whether temporary or permanent, must not be within the clear zone or obstruct the view of traffic.

b) Service vehicles used in the installation and maintenance of the Site must not park within the clear zone or obstruct the view of traffic.

c) Clear Zone information can be found in Section 19.4.3.

21.3.9 Interference

a) Wireless communication installations must not impede or interfere with the operation of Ministry communication, electrical or mechanical systems or other installations. This includes (but is not limited to): radio communication facilities, traffic signals, cameras, variable speed limit systems, and dynamic message signs.

21.3.10 Exposure to Radiofrequency Fields

a) All wireless communications Sites on Highway Right-of-Way shall comply with the requirements described in Health Canada Safety Code 6 – Limits of Human Exposure to Radiofrequency Electromagnetic Energy in the Frequency Range from 3 kHz to 300 GHz.

b) Responsibility to comply with Health Canada guidelines falls to the wireless communications companies. Applications for wireless communications Sites will confirm that the design of the facility complies with Health Canada guidelines.

21.4 Required Referrals

21.4.1 Public Consultation

a) Innovation, Science, and Economic Development Canada (ISED) mandates wireless communication companies to consult the public and local Land-use Authorities before installing new wireless Equipment or making changes to existing Equipment (see CPC-2-0-03 – Radiocommunication and Broadcasting Antenna Systems for specific information).

b) Public consultation for wireless communication Sites on Highway Right-of-Way shall follow the local Land-use Authority's process. In the event the local Land-use Authority has no set consultation process, wireless communication companies must follow ISED's default public consultation process.

c) District staff shall contact local Land-use Authorities to ensure they are aware of applications received by the Ministry. The Ministry believes that any concerns or suggestions expressed by local Land-use authorities are important elements to be considered with respect to wireless communications Sites. The Ministry will strongly consider the results of the subsequent consultation process as part of its authorization process.

21.4.2 Structural Engineering

a) District staff shall refer all applications and designs for new and materially amended wireless communication Sites located on Ministry structures to Structural Engineering to ensure the design of the proposed Site does not have any detrimental impact on the structure.

21.4.3 Radio and Electronics Section

a) District staff shall refer all applications and designs for all new wireless communication Sites to the Radio and Electronic Section of the Construction and Maintenance Branch for review to ensure safety and if a proposed site is required/anticipated for future ministry use.

21.4.4 Electrical Engineering

a) District staff shall refer all applications and designs for all new and materially amended wireless communication Sites to Electrical Engineering to ensure electrical standards have been followed and ensure that no interference will occur if the Site is near intersections with traffic signals or other electrical devices.

21.4.5 Regional Property Services

a) Where confirmation of the existing and future status of provincial highway lands is required, District staff shall refer applications and designs for new wireless communication Sites to Regional Property Services for assistance.

21.4.6 Regional Partnerships and Planning; Project Delivery

a) District staff shall refer all applications and designs for new wireless communication Sites to Regional Partnerships and Planning and/or Project Delivery to ensure a proposed Site is not required for highway expansion in the near future.

21.5 Annual Fees

a) Section 62 of the Transportation Act allows the Ministry to collect a Fee for authorizations on Highway Right-of-Way when the authorization is in the nature of a license, but must charge not less than market rate.

b) Master Use Agreements are in the nature of a license and Fees are charged to each wireless communications company based on the geographic location of Sites, the number of antennas at each Site, and the type of structure.

c) All wireless communications companies are subject to Fees for their Site(s) on Highway Right-of-Way. The fee schedule for each wireless communications company is contained within their respective MUA.

d) Utilities Services in Ministry Headquarters in Victoria is responsible for collecting Fees from each wireless communications company. Once a new site permit is issued (or an existing permit amended), the District sends an electronic copy to Utilities Services for billing purposes. Any questions with respect to Fees should be directed to Utilities Services.

22. FIBRE OPTIC COMMUNICATIONS SYSTEMS IN MINISTRY-OWNED CONDUIT

References

Legislation:

- Transportation Act

Other Documents and Sources:

- Master Use Agreements (not viewable externally)
- Electrical and Traffic Engineering Manual – Section 600: Intelligent Transportation Systems

22.1 About Ministry-Owned Conduit:

a) This chapter provides information with respect to the installation, operation, maintenance, and administration of fibre optic communications systems on Highway right-of-way within Ministry-owned conduit. The Ministry installs fibre optic infrastructure within highway right-of-way to support its Intelligent Transportation System (ITS) needs. Ministry fibre optic cable is generally housed within Ministry-owned conduit systems, which may have spare capacity (i.e. empty ducts). Empty ducts owned by the Ministry may be available for use by other parties.

b) The Ministry installs conduit for its own purposes in accordance with the policies outlined in Section 600: Intelligent Transportation Systems – Electrical and Traffic Engineering Manual.

c) For information on the installation of fibre optic infrastructure (and other underground communications infrastructure) on highway right-of-way that is not within Ministry-owned conduit, see Chapter 20.

22.2 Definitions

a) The following definitions apply throughout this chapter:

- **Equipment:** The fibre optic cables, modems, ducts and conduit, vaults, manholes and other accessories, structures and materials comprising a fibre optic communications system.
- **Fee:** The amount payable by a fibre corporation to the Ministry as calculated in accordance with the terms set out in the Master Use Agreement between the Ministry and a fibre corporation.
- **Fibre Optic Communications System:** The configuration of the equipment installed, maintained, and operated on highway right-of-way within Ministry-owned conduit for the purpose of providing communications services. All fibre optic communication systems will be described with greater certainty on the plan(s) or drawing(s) appended to each Permit.
- **Master Use Agreement:** An agreement between the Ministry and a fibre corporation that outlines each party's obligations with respect to fibre optic communication systems, and which is in the nature of a license to allow the Ministry to charge fees for equipment installed within Ministry-owned conduit.
- **Ministry Structure:** All buildings, bridges, tunnels, towers, signs, poles, lighting structures, and Ministry-owned conduit.

- **Permit:** An authorization granted by a Ministry representative, allowing a fibre corporation to establish a fibre optic communications system.

22.3 Authorizations

22.3.1 Master Use Agreement Required:

a) A complete authorization for Equipment in Ministry-owned conduit is comprised of two mandatory components: A Master Use Agreement (MUA) and a Permit.

b) A valid MUA between a fibre corporation and the ministry is required before the fibre corporation can receive a permit to install Equipment on highway right-of-way within Ministry-owned conduit.

c) The fibre corporation is required to follow all terms and conditions outlined in the MUA.

d) Utilities Services within Ministry headquarters in Victoria is responsible for the administration of MUAs.

22.3.2 Permit Required:

a) A Permit issued by the applicable District is required for all Fibre Optic Communication Systems on highway right-of-way.

b) For a fibre corporation with more than one Fibre Optic Communication System within Ministry-owned conduit, each system must be individually permitted.

c) A fibre corporation's MUA must be signed and in effect (valid) before a Permit can be issued.

d) If a fibre corporation's MUA is cancelled or expires, all of that same fibre corporation's Permits for Equipment installed within Ministry-owned conduit are no longer valid.

e) A fibre corporation that wishes to materially modify an existing Fibre Optic Communications System, such as by updating/changing Equipment, or adding additional Equipment, within Ministry-owned conduit must apply to the applicable District for an amended Permit.

22.4 Siting Policies

22.4.1 Highway Class

a) Except where otherwise noted, Equipment is permitted within Ministry-owned conduit on all classes of highways if the installation, operation, and maintenance of the subsequent Fibre Optic Communication System will not interfere with safety and the use and operation of the highway.

22.4.2 Access

a) Fibre corporations must show in their applications that there is suitable access to their Fibre Optic Communications System.

22.4.3 Utility Service Connections

a) All utility services connecting to the Fibre Optic Communications System (e.g. electrical and communications services) will be installed underground.

22.4.4 Clear Zone Requirements

a) All aboveground objects that comprise the Fibre Optic Communications System, whether temporary or permanent, must not be within the clear zone or obstruct the view of traffic.

b) Service vehicles used in the installation and maintenance of the Site must not park within the clear zone or obstruct the view of traffic.

c) Clear zone information can be found in Chapter 19.4.3.

22.5 Required Referrals

22.5.1 ITS Engineering

a) District staff shall refer all applications and designs for all new and materially amended Fibre Optic Communications Systems to ITS Engineering to ensure ITS standards have been followed.

22.5.2 Structural Engineering

a) District staff shall refer all applications and designs for new and materially amended Fibre Optic Communications Systems located within Ministry-owned conduit attached to Ministry structures to Structural Engineering to ensure the design of the Fibre Optic Communications System does not have a detrimental impact on the structure.

22.5.3 Regional Partnerships and Planning; Project Delivery

a) District staff shall refer all applications and designs for new and materially amended Fibre Optic Communications Systems to Regional Partnerships and Planning and/or Project Delivery to ensure a proposed location is not required for highway expansion in the near future.

22.6 Annual Fees

22.6.1 Background to Fees

a) Section 62 of the Transportation Act allows the Ministry to collect Fees for authorizations on Highway Right-of-Way when the authorization is in the nature of a license, but must charge not less than market rate.

b) Master Use Agreements are in the nature of a license.

22.6.2 Collection of Fees

a) Utilities Services in Ministry headquarters in Victoria is responsible for invoicing and collecting Fees from each fibre corporation with Equipment in Ministry-owned conduit. Once a new Permit is issued (or an existing Permit amended), the District sends an electronic copy of the Permit to Utilities Services for billing purposes.

b) Fees for Equipment within Ministry-owned conduit are calculated on a per metre rate, with higher fees for Equipment on Ministry Structures.

c) From time to time the Ministry may accept from fibre corporations, services in lieu of fees which help meet the Ministry's ITS objectives. This will be determined on a case-by-case basis after consultation with Electrical and ITS Engineering and Utilities Services.

d) Any questions with respect to Fees should be directed to Utilities Services.

23. INDEPENDENT POWER PRODUCERS

References

Legislation:

- Transportation Act

23.1 Approach to Independent Power Producers

23.1.1 General Overview

a) Independent Power Producers (IPPs) generate electrical power to sell to an electric power utility (e.g. BC Hydro or FortisBC) through an Electricity Purchase Agreement (EPA). The electricity is added to the overall public electrical grid. In British Columbia, most IPPs currently generate electrical power through run-of-river hydroelectric projects.

b) IPPs owners and operators can include power production companies, municipalities, First Nations, and private individuals. However, as IPP projects are typically very expensive to develop, most are owned and operated by investor-owned, for-profit organizations.

c) The location where the power is generated is often some distance from where the power is added to the public electrical grid (known as the interconnection point). As such, IPPs may from time-to-time apply to install power poles within highway right-of-way.

23.1.2 Policies and Standards for Independent Power Producers

a) Like other utility infrastructure, all IPP pole lines installed within highway right-of-way must be authorized by the Ministry as per section 62 of the Transportation Act. See Chapter 3 for more information. Due to the unique nature of IPPs, District Development Services staff must contact Utilities Services upon receipt of an application by an IPP to install pole lines within highway right-of-way.

b) IPPs shall comply with all applicable policies, standards, and procedures in this manual, including those delineated in Chapter 19: Overhead Power and Communications.

c) All IPP pole lines installed within highway right-of-way must be constructed and maintained to BC Hydro standards or equivalent.

d) The Ministry, at its sole discretion, may require proof of insurance, an Irrevocable Letter of Credit (ILOC), or other risk management instruments to mitigate potential risks from an IPP installation within highway right-of-way. See chapter 2.7 for more information.

e) An IPP applying to install power poles highway right-of-way must provide sufficient evidence to the satisfaction of the Ministry that it has the ongoing capability to maintain and repair its infrastructure, as well as respond to emergencies.

23.1.3 Permitting Restrictions

a) Where an IPP is selling power to an electric power utility (e.g. BC Hydro or FortisBC) through an EPA, the Ministry prefers that distribution power pole lines less than 69 kV nominal voltage within highway right-of-way be owned and permitted to that same electric power utility rather than the IPP.

b) The Ministry will not authorize IPP transmission power pole lines rated at or over 69 kV nominal voltage within highway right-of-way. Where it is not possible to locate such power pole lines outside of the highway right-of-way, they must be permitted to and owned by the electric power utility (e.g. BC Hydro or Fortis) that entered into the EPA with the IPP.

d) Under no circumstances will the Ministry authorize IPP infrastructure used in the production of electricity (e.g. turbines, penstocks) within highway right-of-way.

23.1.4 Future Relocations

a) The Ministry will not compensate IPPs for power pole lines installed within highway right-of-way which require relocation to accommodate a future highway construction or improvement project.

24. INTENTIONALLY LEFT BLANK

This chapter is intentionally left blank to allow for future modifications to this manual.

25. METHOD OF UTILITY INSTALLATION

References

Legislation:

- WorkSafeBC

Other Documents and Sources:

- BC Supplement to TAC Geometric Design Guide
- Lane Closure/Works Notification (form 1080) MOTI
- Ministry Standard Specifications ss.194: Traffic Management for Work Zones
- Traffic Management Manual for Work on Roadways

25.1 Ministry Approach to Utility Installation

a) All work carried out on highway right-of-way by utility organizations and/or their contractors must be done in such a way that:
   i. Public investment in the highway structure is preserved wherever possible;
   ii. Highway safety is not compromised; and
   iii. Normal traffic flow is disrupted as little as possible.

25.2 Trenchless Technology

25.2.1 General Policies and Standards

a) Trenchless technology refers to methods of installing and repairing utility infrastructure that does not require traditional open trenching. As such, trenchless technology is the Ministry's preferred method of installing underground utilities which cross the highway prism and any drainage systems or culverts within highway right-of-way.

b) Examples of trenchless methods include (but are not limited to):
   i. Boring;
   ii. Augering;
   iii. Jacking;
   iv. Water jetting; and
   v. Horizontal directional drilling.

c) The use of trenchless technology must be done using equipment and methods which will not damage the highway prism or affect traffic safety and highway operations.

d) During installation using trenchless methods, the utility organization must ensure continuous contact between the outside of the pipe and surrounding soil.

e) Boring or auguring equipment must be designed to encase the excavation as earth is removed, with the cutting edge protruding no more than 30 mm beyond the end of the pipe or casing.

f) Water jetting is not permitted unless the design for the crossing has been certified not to cause any settlement on the road surface. The design must be certified by a Professional Engineer who is experienced in pipeline design and is registered in B.C. at the time a permit application is submitted to the Ministry. This method is subject to additional review and requires the approval of the District Manager (or designate).

25.2.2 Jacking and Boring Pits

a) Jacking and boring pits must be offset from the highway prism by sufficient distance to not cause ground instability.

b) Jacking and boring pits should be located and designed in such that highway drainage infrastructure continues to function and does not drain or overflow into the pit.

c) Jacking and boring pits are not to be located in medians.

d) Jacking and boring pits must be fenced appropriately in consideration of WorkSafeBC requirements.

e) Jacking and boring pits must be offset from the outside edge of the shoulder by a distance which is at least equivalent to the vertical distance from the pavement to the bottom of the pit. Greater offset distances may be required based on site specific geotechnical conditions.

f) If jacking and boring pits are located within the clear zone, they must have an acceptable temporary barrier installed in accordance with Ministry standards (refer to BC Supplement to TAC - Chapter 600 Safety Elements).

   i. Details regarding placement of protective works within the highway right-of-way must be included in the detailed site plan.

   ii. Reference to Ministry standards specifications must be included on the drawings submitted with application.

g) Shoring must be designed by a qualified Professional Engineer and done in accordance to WorkSafeBC rules.

25.3 Trenching Policies and Standards

25.3.1 No Trenching without Written Approval

a) Any proposed open trenching requires written approval from the District Manager (or designate). The utility organization must provide justification explaining why open trenching is required. Additional review of such evidence and justification by Ministry subject matter experts is generally required.

b) Generally, the Ministry will only approve trenching in the following scenarios:

   i. On low volume, unpaved roads;

   ii. On highway sections which are likely to be recapped or rebuilt within two years;

   iii. On highway sections where the road surface is in such poor condition that a permanent pavement patch will not detract from the quality of the surface;

   iv. In urban areas on highways without full control of access; or

   v. Where the permit holder has demonstrated that a reasonable effort has been made to bore or jack the pipe or casing and that it is impractical or impossible to install the crossing in this way.

25.3.2 Requirements for Trenches Crossing Gravel Surface Roads

a) Trench width must not be greater than necessary to allow for the installation of the utility infrastructure.

b) Excavated material must be removed immediately and must not be stored on the highway right-of-way. Exceptions may be permitted where the District Manager (or designate) has given approval, and the following conditions have been met:

   i. The material has been barricaded in a manner that has been approved by the District Manager;

   ii. The spoil piles are outside the Clear Zone; and

   iii. No excavated material remains on the site overnight.

c) Stockpiling of native material adjacent to the trench is not permitted.

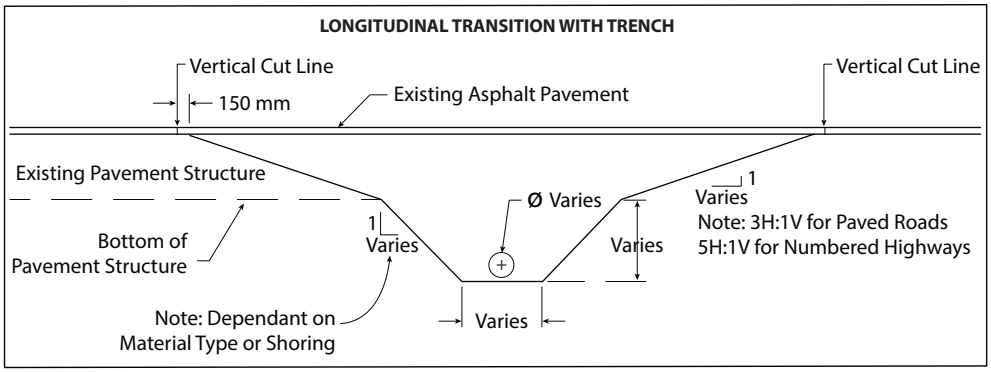
d) Trenches must be backfilled or adequately covered at the end of each work day, unless prior approval from the Ministry is received, and any open areas must be adequately fenced, lit, and signed.

25.3.3 Requirements for Trenches Crossing Paved Roads

a) Pavement must be cut by hand or approved mechanical means in straight lines parallel to the trench centreline.

b) Distance from a pavement cut to the edge of the trench must be at least 150 mm or otherwise sufficient to ensure the pavement will not be undermined by sloughing. See Figure 23-2 for additional information.

Figure 23-2: Longitudinal Transition with Trench



c) Excavated material must be removed immediately and must not be stored on the highway right-of-way. Exceptions may be permitted where the District Manager (or designate) has given approval, and the following conditions have been met:

   i. The material has been barricaded in a manner that has been approved by the District Manager;

   ii. The spoil piles are outside the Clear Zone; and

   iii. No excavated material remains on the site overnight.

d) Stockpiling of native material adjacent to the trench is not permitted.

e) Trenches must be backfilled or adequately covered at the end of each work day, unless prior approval from the Ministry is received, and any open areas must be adequately fenced, lit, and signed.

f) Trench shoring must conform to WorkSafeBC standards and is to be used where soil conditions warrant. Extreme care must be taken to avoid sloughing of the trench sides to minimize damage to the subgrade beyond the limits of excavation. Where sloughing occurs, a new saw cut will be undertaken to maintain support of the pavement edge. Any evidence of trench wall sloughing/yielding is to be reported to the Ministry.

g) Machines with steel tracks or flat steel pads are not permitted on any portion of the paved surface at any time. When heavy rubber-tired equipment is turning on the paved surface, care must be taken to prevent scarring.

h) During the removal or replacement of any existing curb, gutter or sidewalk, the edges of the work area are to be saw cut by approved means in straight, clean lines to provide a clean and even joint. Cuts shall be made such that cut edges converge at right angles and extend into the road surface to either half a lane or full lane width. Seams shall be outside of wheel paths and other surfaces that experience heavy traffic load.

i) Trenching may be subject to risk management measures as noted in Chapter 2.

j) All open trenching repairs shall be subject to a minimum two-year warranty covering any deficiencies, unaddressed conditions, failures, settlement, etc.

25.3.4 Requirements for Trenches Crossing Driveways and Entrances

a) Trench width must not be greater than necessary to allow for the installation of the utility infrastructure.

b) Excavations across entrances, whether private or commercial, must be backfilled and thoroughly compacted by the end of each working day. The surface must be restored, whether paved or gravel, to its original or at least useable condition within 48 hours once installation is complete.

c) Excavated material must be removed immediately and not be stored on the highway right-of-way. Exceptions may be permitted where the District Manager (or designate) has given approval, and the following conditions have been met:

   i. The material has been barricaded in a manner that has been approved by the District Manager;

   ii. The spoil piles are outside the Clear Zone; and

   iii. No excavated material remains on the site overnight.

d) Stockpiling of native material adjacent to the trench is not permitted.

e) Trenches must be backfilled or adequately covered at the end of each work day, unless prior approval from the Ministry is received, and any open areas must be adequately fenced, lit, and signed.

f) Use of protective road plates may require additional review and shall only be installed where and when approved by the Ministry. Use of Protective Road Plates shall only be considered where the trench is:

   i. Across entrances to residential and commercial properties; and

   ii. In urban areas where the subject road's posted speed is ≤ 60 km/h.

g) Affected property owners must be notified at least 48 hours in advance of any work activity that will result in a change in the normal use of an access. The Ministry may specify specific terms and conditions that apply to any trenching work that will significantly disrupt traffic flow to/from an affected residential or commercial property. The utility organization shall include plans to ensure access remains unimpeded for all emergency vehicles.

25.3.5 Trench Backfill Requirements

a) Pipe bedding must conform to industry standards.

b) Where sloughing of trench sides has undermined the pavement, the pavement must be marked with a painted line showing the extent of the damaged area. Pavement must be removed from this area and the voids filled and compacted in accordance with backfill requirements identified in your permit.

c) Trenches must be backfilled with granular material and compacted in accordance with the Ministry's Design Build Standard Specifications for Highway Construction:

i. Select Granular Sub-base (SGSB) material must have the minimum thicknesses shown in the table below or be to the depth of the existing pavement structure, whichever is greater, based on roadway designation and Subgrade type. The sub-base material must consist of granular material which meets Ministry standards SGSB as set out in Section 202.06, ***Design Build Standard Specifications for Highway Construction***.

Pavement Structure Type	Roadway Designation	Subgrade Type	Minimum SGSB thickness
A or B	Medium to High Volume	Rock	300 mm
A or B	Medium to High Volume	Coarse Grained Soil meeting Ministry SGSB requirements	300 mm
A or B	Medium to High Volume	Fine Grained Soil (Unified Soils Classification System – ML/CL/OL//MH/CH/OH)	600 mm
C or D	Low Volume and Subdivision	Rock	150 mm
C or D	Low Volume and Subdivision	Coarse Grained Soil meeting Ministry SGSB requirements	150 mm
C or D	Low Volume and Subdivision	Fine Grained Soil (Unified Soils Classification System – ML/CL/OL//MH/CH/OH)	300 mm

ii. Crushed base gravel must be a minimum compacted thickness of 300 mm and consist of 25 mm crushed gravel which meets Ministry standards for intermediate-graded base course aggregate as set out in Section 202.04, Design Build Standard Specifications for Highway Construction (preferred over 25 mm well graded base course aggregate).

d) The Ministry will require verification of backfill densities within roadway trenches. Verification of trench backfill densities beyond the roadway prism will be at the Ministry's discretion.

e) Shoring must be removed successively with backfill lifts completed as per the Design Build Standard Specifications for Highway Construction.

f) Backfill material must meet or exceed all applicable Ministry's standards and be free of frozen and organic material.

g) Unless otherwise directed, trenches outside of the roadway prism for parallel installations must be backfilled and compacted to native soil conditions.

   i. Backfill must be placed in layers no greater than 250 mm deep and compacted with appropriate tamping equipment to a minimum of 95% Standard Proctor Density to within about 300 mm of the surface and 100 percent for the final 300 mm.

   ii. Sites are to be reseeded to standards set out in Section 757, Design Build Standard Specifications for Highway Construction.

25.3.6 Restoration of Ditches

a) All ditches must be restored to their previous or better condition to the full satisfaction of the Ministry.

25.4 Trench Resurfacing

25.4.1 Temporary Patching

a) A temporary asphalt patch must be applied, unless otherwise directed, as soon as any portion of the highway can be re-opened to traffic.

b) Where an exception to pavement patching is granted, the backfill shall be brought up to grade with a final layer of 25 mm crushed gravel per material specifications provided in Section 202.4, Design Build Standard Specifications for Highway Construction.

25.4.2 Gravel Surfacing

a) Gravel and earth highway surfaces must be restored to a well-compacted, stable and free draining surface that matches the existing surface.

b) Materials used for gravel surfacing must meet or exceed the standards outlined in Section 202, Design Build Standard Specifications for Highway Construction:

   i. For surfaces which were previously graveled and where no paving is planned: 300 mm of high-fines surfacing aggregate; and

   ii. For all surfaces where paving is planned: 300 mm of 25 mm intermediate graded base course aggregate (preferred over 25 mm well graded base course aggregate).

25.4.3 Shoulders

a) Shoulders must be restored to a well-compacted, stable, and free draining surface that matches the existing surface.

b) All materials must be compacted to 100% Standard Proctor Density.

c) Materials for shoulder restoration must be in accordance with Section 202, Design Build Standard Specifications for Highway Construction:

i. Base course aggregate: 300 mm of 25 mm intermediate graded base course aggregate (preferred over well graded base course aggregate).

ii. Surfacing: 300 mm of high-fines surfacing aggregate.

d) All granular or other material must be removed from paved surfaces after shoulder restoration has been completed.

25.4.4 Permanent Patching

a) Pavement edges must be hand cut straight, made true, cleaned, and primed before installing a final patch. A diamond blade circular saw is to be used to prepare pavement edges.

b) Asphalt concrete or Portland cement pavement must be restored to the same thickness as the existing surface or to a minimum of 50 mm thickness, whichever is greater.

c) Asphalt concrete is to be laid in layers no greater than 75 mm thick (or as otherwise specified by the Ministry) with each layer being thoroughly compacted before successive layers are added.

d) Asphalt concrete is to be "Type B" medium mix or fine mix, or as otherwise specified by the Ministry and/or meet the minimum requirements in Section 501 of the current version of the Design Build Standard Specifications for Highway Construction.

e) Where there is sufficient width and length, paving must be done be machine.

f) The utility organization will warrant that the permanent pavement patch meets Ministry standards for a minimum of one year or as specified by the Ministry from the date that the patch is installed.

g) At the Ministry's request, the utility organization will repair the pavement patch (if it is deficient) at its expense within the warranty period.

25.5 Blasting

a) All proposed blasting must be reviewed and approved by the Ministry.

b) Blasting plans shall reflect the requirements in Section 204, Rock Cuts, of the Design Build Standard Specifications for Highway Construction and the requirements of other existing adjacent utilities and structures, including peak velocity and particle displacement calculation.

25.6 Installation of Fibre Optic Infrastructure through Microtrenching

25.6.1 About Microtrenching

a) Microtrenching is a method for installing fibre optic cable on roads and highways by creating a narrow, shallow trench using saw cut technology. Typically, microtrenches are a few centimeters wide and no more than 30 centimeters deep.

b) Microtrenching is generally more common in urban areas.

c) Microtrenching is usually significantly cheaper than installation of fibre optic infrastructure by way of traditional trenching methods or ploughing.

d) Microtrenching can negatively impact pavement integrity. Water seepage is a concern with microtrenching, and consistent freezing and thawing can damage the road base and contribute to potholes, cracking, and other defects. This in turn affects highway safety and increases road maintenance costs.

25.6.2 Alternative Installation Methods Must be Ruled Out

a) If a utility organization wishes to install fibre optic cable within highway right-of-way, all other alternative installation methods must be ruled out prior to the Ministry considering microtrenching as a viable option.

b) If other alternative installation options exist, the utility organization must justify to the satisfaction of the District Manager (or designate) why such alternatives are not practical. Cost savings for the utility organization is not a valid reason for dismissing other alternatives.

c) Where microtrenching is allowed, such installations shall be in line with the locations and standards detailed in Technical Circular T-05/09. For applications that cannot meet these locations and standards, District staff must consult Ministry engineering staff and/or the Office of the Chief Engineer.

25.6.3 Paralleling

a) The preferred methods for fibre optic installations parallel to the highway centreline, in order of preference, are:

   i. Overhead on existing structures, such as power or telephone poles, or underground in existing telecommunications conduit;

   ii. Underground in conduit installed through traditional trenching technology;

   iii. Underground through microtrenching outside of the highway prism; and

   iv. Underground through microtrenching outside of the paved surface, such as in the gravel shoulder.

b) Microtrenching is not allowed under the paved surface (including the paved shoulder) for installations that run parallel to the highway.

25.6.4 Crossings

a) The preferred methods for installation of fibre optic crossings in order of preference are:

   i. Overhead on existing structures, such as power or telephone poles, or underground in existing telecommunications conduit;

   ii. Underground in new conduit installed by way of trenchless technology; and

   iii. Underground through microtrenching.

26. UTILITY ATTACHMENTS TO MINISTRY STRUCTURES

References

Legislation:

- Ministry of Transportation and Infrastructure Bridge Standards and Procedures Manual

26.1 Approach to Utility Attachment to Ministry Structures

26.1.1 Approvals Considered on a Case-by-Case Basis

a) The Ministry may authorize the installation of utility infrastructure on Ministry structures, namely bridges. Such authorizations are considered on a case-by-case basis and should only be considered when absolutely necessary. Any previous approvals do not establish precedent for authorizing future installations.

26.1.2 Utility Organizations Must Provide Rationale

a) All applications for utility attachments to Ministry Structures shall include detailed rationale explaining why other alternative routes or crossing options are not possible (e.g. because of unacceptable environmental risk). A cost comparison of the alternatives shall also be provided.

b) All applications to attach utility infrastructure to Ministry structures are subject to review by the Ministry's Structural Engineering group. Review by the Chief Engineer may also be required. Detailed design drawings that are prepared, signed, and sealed by a Professional Engineer experienced in structural engineering and licenced to practice in British Columbia shall be provided with the application.

c) The onus is on the utility organization to provide the evidence and justification to the satisfaction of the Ministry that an attachment to a Ministry structure is warranted. Utility organizations must ensure all required supporting documentation and information provided is of high quality with enough detail to meaningfully aid in the Ministry's review process.

26.1.3 Policies and Standards

a) The policies and standards in this chapter apply to new utility installations and any modifications or replacements of existing installations.

26.2 Restrictions by Utility Type

26.2.1 Oil and Gas Pipelines

a) Pipelines are restricted to bridges which are water crossings and are permitted only when alternative routes or crossings are not feasible (e.g. because of environmental risks or sensitivities).

b) Pipelines are not permitted on timber 'through truss' bridges due to the increased risk of damage or collapse from errant or overheight vehicles.

c) Pipelines are not permitted in tunnels or culverts.

d) Pipelines are not permitted on bridges and structures where one or more oil or gas pipelines have already been installed.

e) On timber bridges, only low pressure pipelines operating at pressures less than or equal to 700 kPa with an outside pipe diameter less than or equal to 114 mm may be permitted.

f) On bridges that have not been designed according to the Seismic Design Guidelines, only low pressure pipelines operating at pressures less than or equal to 700 kPa with an outside pipe diameter less than or equal to 168 mm may be permitted.

g) On bridges other than those specified above, only low and intermediate pressure pipelines operating at pressures up to 2070 kPa with an outside pipe diameter less than or equal to 324 mm may be permitted.
Note – see restriction on intermediate pressure pipelines detailed in Chapter 17.3.3.

h) Restrictions on pipeline size and operating pressure are intended as a means of reducing the negative consequences of a pipeline rupture.

26.2.2 Water and Sewer Lines

a) Water and sewer lines are restricted to bridges which are water crossing and are permitted only when alternative routes or crossings are not feasible (e.g. because of environmental risks or sensitivities).

b) Sewer lines are not permitted on timber 'through truss' bridges due to the increased risk of damage or collapse from errant or overheight vehicles.

c) Water and sewer lines are not permitted in tunnels or culverts.

26.2.3 Power and Communications Lines

a) Power transmission lines rated at or above 69 kV are not permitted on bridges or in tunnels.

b) Power lines, regardless of voltage, are not permitted in culverts or other drainage structures.

c) Communications lines, including copper and fibre optic cables, are not permitted in culverts or other drainage structures.

26.3 General Policies and Standards

26.3.1 Location

a) Utility infrastructure is not permitted to be attached above the bridge deck or to railings, rail posts, parapets or other barriers.

   i. Electric cables with voltages less than or equal to 347 volts phase to ground and communications cables are permitted to be attached to the non-traffic faces of parapets, raised sidewalks, and curbs, or placed inside conduits cast into concrete.

b) The attachment of utility infrastructure must not reduce the vertical clearance under the bridge.

c) Utility infrastructure other than gas pipelines must be installed inside the facia girder.

d) Gas pipelines must be installed outside the facia girder.

e) Pipelines and pipes carrying fluid commodities are not permitted inside steel and concrete box girders.

f) On structures with low clearance to flood waters, utility infrastructure must not be installed on the outside of an upstream girder or truss unless specifically approved by the Ministry's Structural Engineering group.

g) Utility infrastructure transporting mutually hazardous materials (such as fuels and electric power) must be mounted on opposite sides of a bridge.

26.3.2 Provisions for Bridge Maintenance

a) Utility installations must not interfere with or pose a risk to bridge maintenance or inspection activities.

b) Utility installations must be designed to accommodate vertical jacking of the bridge superstructure by at least 100 mm.

26.3.3 Attachments

a) All holes required to be made for utility attachments in existing structural members must be drilled.

b) Holes required to be made in concrete for utility attachments are not permitted within 150 mm of pre-stressing strands.

c) Field welding of utility attachments to existing bridge members is not permitted.

d) Bolting of utility attachments to existing structural steel bridge members will be permitted only when it does not cause the bridge member to be overstressed. Clamp type devices are preferred. Holes required to be made in existing structural steel members must be drilled.

e) All steel utility conduits and mounting hardware must be hot dip galvanized or stainless steel.

f) Adhesive anchors shall be used for attachments to concrete bridge components. Acceptable anchoring systems are listed in the Ministry's Recognized Products List.

g) Damage to coatings of any bridge component caused by the installation, operation, or maintenance of the utility infrastructure must be repaired by the utility organization at its cost to the satisfaction of the Ministry.

h) Utility installations must be electrically isolated from all steel bridge components.

26.3.4 Abutments

a) Openings created in bridge abutment walls to allow for the passage of utility pipes or conduits must be no larger than necessary but must allow for differential settlement between the abutment and the utility installation.

b) The opening in the abutment around the utility must be completely sealed to preclude leakage or moisture or backfill material.

c) Access to service vaults behind abutments must be located outside the traveled portion of the highway.

26.3.5 Shut-off Valves

a) Pressure-sensitive automatic shut-off and check valves must be installed for all oil and gas pipelines, as well as water and sewer lines, crossing bridges.

b) Pressure-sensitive automatic shut-off valves must be located at the supply end of the bridge and a check valve located at the opposite end.

c) Valves must be located between 10 and 100 metres from the back of the bridge abutments.

26.3.6 Vibration

a) Excess vibration of the utility installation due to wind or traffic loads must be prevented.

26.3.7 Insulation

a) Utility infrastructure carrying commodities that are subject to freezing must be insulated.

26.3.8 Expansion

a) Utility infrastructure shall be provided with suitable expansion devices near bridge expansion joints as required to prevent thermal and other longitudinal forces from being transferred to bridge members.

b) The design of pipelines and ducts must make adequate provision for expansion and contraction.

26.3.9 Loading

a) Utility installations and their supports must be designed to support their dead load, plus wind, thermal, and earthquake forces, as well as other forces from the utility installation itself (e.g. surge).

b) Where a utility installation would add appreciable loads or dynamic effects that were not contemplated in the original design of the bridge, the affected structural components must be analyzed by a qualified Professional Engineer registered in B.C. The Ministry retains the right to set the terms of the analysis. The Professional Engineer conducting the analysis must first be approved by the Ministry before conducting any analytical work and the cost of the analysis shall be the responsibility of the utility organization.

26.4 Drawings

26.4.1 Engineered Drawings Required

a) Applications to attach utility infrastructure to a bridge must include plans or design drawings showing details of the proposed attachment and be prepared and signed (or sealed) by a Professional Engineer experienced in structural engineering and licenced to practice in British Columbia.

b) Information which must appear on these drawings includes (but is not limited to) the elements outlined in the sections below. It is advised that proponents allow for ample lead time and check with District Development Services staff for any additional requirements before submitting an application.

26.4.2 Drawing Title Blocks

a) All drawing title blocks must show the bridge name and number, the utility organization's name, the name of the consultant designing the attachment if applicable, and the name and phone number of the utility organization's contact person.

26.4.3 Type of Utility

a) The type of utility to be carried on the structure must be indicated (e.g. fibre optic cables, natural gas).

b) In the case of pipelines carrying fluids and gases, drawings must show design and maximum operating pressures and the direction of flow.

c) The voltage of all electric power lines must be shown (voltages shown as phase to ground).

26.4.4 Loading

a) The weight of the utility and its attachments per unit length must be indicated.

26.4.5 Location

a) Drawings must include a plan and elevation view of the bridge with the location of the utility and its attachments to the bridge. The plan view must show a north arrow, the direction of river flow, and the direction to the nearest community.

b) The location and details of all service vaults, shut-off, and check valves must be shown.

c) The depth and location of all buried components relative to bridge substructure elements must be shown, as well as a trench detail showing backfill requirements.

d) The location of all other utilities attached to the bridge must be shown.

26.4.6 Details

a) Details of all attachments must be shown, including the routing of the utility at the abutments.

26.4.7 Design Codes

a) Design codes used for design and construction of the utility and its attachments must be indicated.

26.4.8 Expansion and Contraction

a) The range of expansion and contraction in the utility must be shown.

26.4.9 Notes to Appear on Drawings

a) The following construction notes must be included on the drawings:

i. All abandoned holes in concrete must be filled with a non-shrink grout.

ii. A magnetic rebar detector, such as a pachometer, must be used to ensure holes drilled in reinforced concrete do not coincide with any reinforcing steel.

iii. Diamond tipped drill bits must not be used to drill holes for hanger inserts.

27. EXCEPTIONS AND REFERRALS

References:

N/A

27.1 Exceptions

27.1.1 General Information About Exceptions

a) All utility installations must meet the Ministry's policies and standards as delineated in this manual and other sources as applicable. However, applications for utility installations that do not (or cannot) meet the Ministry's policies and standards may still be considered on a case-by-case exception basis.

b) An exception is a proposed utility installation or component of an installation that does not follow or meet the Ministry's policies and/or minimum standards, and which requires further review and approval on specified terms and conditions by appropriate Ministry authorities.

c) There is no guarantee that an application being reviewed for exception will be approved.

d) A single utility application may include one or more components requiring an exception. Each component must be reviewed and approved separately.

e) Each exception is determined on a case-by-case basis. A decision reached on one application does not contribute to the outcome of subsequent applications, nor shall a previous approval be considered to establish a precedent.

f) In reviewing exception requests, Ministry staff shall be guided by the following four principles, and the onus is on the utility organization to provide sufficient information to prove to the Ministry's satisfaction that the proposed exception is:

a. Reasonable – the proposed exception and any proposed alternative solutions must be reasonable and within the bounds of normal industry and regulatory standards.

b. Valid – there must be a valid reason the exception is necessary, and it should not place the convenience of the utility organization ahead of the needs or goals of the Ministry.

c. Verifiable – issues or circumstances cited as reasons for the exception request, as well as proposed alternative solutions, must be able to be verified by documentation.

d. Justified – the proposed exception must also be justifiable as the only possible or practical means of installing the proposed utility infrastructure based on all other alternatives considered but otherwise rejected.

27.1.2 Exception Process

a) The utility organization determines that its proposed installation, or components of its proposed installation, does not meet one or more of the Ministry's policies and standards. In its permit application, the utility organization identifies how and why the installation does not or cannot meet Ministry policies and standards. The utility organization also provides details and documentation regarding any potential alternative

solutions. Information that is overly general, vague or incomplete may cause delays or result in rejection of the application. It is recommended that utility organizations contact the applicable District Development Services group well before submitting a permit application to discuss what information and documentation must be provided.

b) The utility organization shall provide information clearly outlining why the Ministry's policies and standards cannot be met, as well as information on any potential alternative solutions. Cost savings for the utility organization is not a valid reason for not complying with Ministry policies and standards. When the permit application package is received by the District, a Development Services staff will review the proposed application, requested exceptions, and any additional supplied information or documentation. Development Services staff shall inform the utility organization if more information is required.

c) As required, the Development Services staff will circulate the application and exception details to the appropriate Ministry subject matter experts and authorities for review. See chapters 27.1.4 and 27.1.5 below.

d) During the exception review process, Development Services staff remain the key contact between the Ministry and the utility organization.

e) At any time during the exception review process, the utility organization may choose to revise or withdraw the application by notifying Development Services staff in writing.

f) The District will issue a permit only if the requested exception is approved by the appropriate Ministry authority. As well, all other elements of the application must meet the Ministry's policies and standards.

g) The Ministry reserves the right to revise these exception review and approvals procedures at any time.

h) Ministry staff with questions about the exception process should contact Utilities Services.

27.1.3 Exceptions Impacting Highway Safety or Operations

a) District staff may reject an application prior to the start of the exception review process if there is a reasonable potential for the proposed application to cause significant disruption to the efficient operation of the highway, or if the installation and operation of the utility infrastructure will create unsafe conditions for the traveling public or anyone working on the highway right-of-way.

27.1.4 Exceptions to Technical Standards

a) Technical standards are described in the preceding chapters and generally include (but are not limited to):

i. Overhead and underground crossing angles;

ii. Horizontal and vertical clearances;

iii. Clear zone requirements;

iv. Protective measures; and

v. Methods of installation.

b) An exception to technical standards may be approved if the exception is minimal and will not adversely impact the operation, safety or integrity of the highway as determined to the satisfaction of the District Manager (or designate), usually in consultation with Ministry engineering staff and other applicable subject matter experts. Exceptions of this nature are sometimes referred to as variances.

c) District Development Services staff will refer the exception to technical standards request to the District Manager (or designate) and the appropriate Ministry engineering discipline(s) or other persons/ departments as required for review.

27.1.5 Exceptions to Location Policies

a) Location policies are described in the preceding chapters and generally specify where utilities can and cannot be installed within highway right-of-way. Exceptions to location policies are to be reviewed and approved as follows:

   i. Prohibited locations – Chief Engineer.

   ii. Unsuitable locations – District Manager (or designate) in consultation with the applicable engineering discipline(s) and/or other subject matter experts.

   iii. Other locations – Unless otherwise noted, District Manager (or designate) in consultation with the applicable engineering discipline(s) and/or other subject matter experts.

b) Applications for power transmission lines rated at 69 kV within and parallel to the highway right-of-way must be reviewed and approved by the applicable Regional Executive Director and the Chief Engineer.

c) Applications for power transmission lines greater than 100 kV within and parallel to the highway right-of-way must be reviewed and approved by the applicable Regional Executive Director, Chief Engineer, and the Deputy Minister (or as prescribed in an applicable Protocol Agreement).

d) Utility installations proposed to be attached to Ministry Structures must be in accordance with the policies and standards in Chapter 26 and reviewed and approved by the Ministry's Structural Engineering group and/or the Office of the Chief Engineer.

27.2 Referrals

27.2.1 Referrals Based on Type of Application

a) Certain applications trigger an automatic referral to (and subsequent review by) Ministry engineering staff or other subject matter experts. These referrals are not the same as exceptions as all applications, including those which meet Ministry policies and standards, must be referred to the noted Ministry group. District Development Services staff shall refer applications for the following (note – this list is not intended to be exhaustive):

   i. Underground conduit and fibre optic cable installations – Electrical and ITS Engineering.

   ii. Fibre optic cable within Ministry-owned conduit – Utilities Services and Electrical and ITS Engineering.

   iii. Installations of wireless communication equipment – See Chapter 21.4.

iv. All Independent Power Producer applications proposing to install power infrastructure of any voltage anywhere within highway right-of-way – Utilities Services and Corporate Procurement and Risk Management in Headquarters.

v. Any proposed utility installations within a concession highway corridor – concessionaires are responsible for the operation and maintenance of the concession highway corridor during the concession term, and therefore consultations with the concessionaire are required before any permits can be approved. Development Services staff shall refer applications for any proposed utility infrastructure on concession highways to the Ministry's Concession Management group in Coquitlam to facilitate consultation.

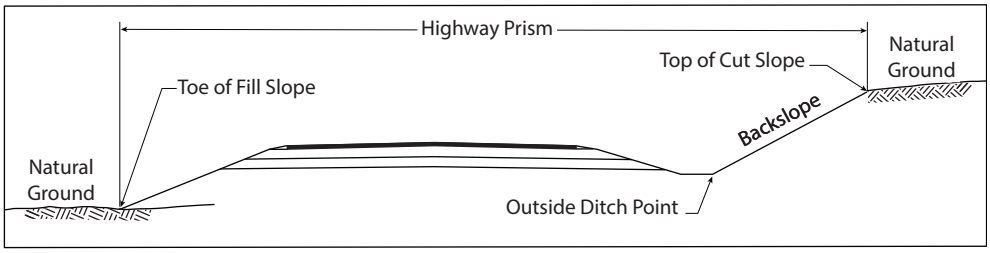
27.2.2 Referrals Based on Agreements

a) District staff shall refer applications that conflict with the terms and conditions of an applicable Protocol Agreement to Utilities Services.

GLOSSARY

Access: A private driveway or a private road intersecting a public road.

Back Slope: The graded uphill slope between the outside ditch point and the natural ground at the top of a cut. Sometimes written in one word as a "backslope" or referred to as a "cut slope".



Clear Zone: The total roadside border area, starting at the edge of the outer through lane edge. This area shall consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear run-out area which are free of fixed object hazards and which may be traversed by errant vehicles. The desired width is dependent upon the design traffic volume and speed and on the roadside geometry. "Recovery zone" is another term that is sometimes used interchangeably with clear zone.

Controlled Access Highway: A highway which has been designated as "controlled access" under Section 48 of Transportation Act. A list of controlled access highways is available on the Ministry's website: http://www.th.gov.bc.ca/controlledAccessHighway/home.aspx.

Cut Slope: See "Back Slope".

Depth of Cover: The vertical distance measured from the topmost part of the underground utility infrastructure (e.g. casing or carrier pipe) to the surface of the highway or ground as applicable. Sometimes referred to as "depth of bury."

Distribution Lines (Pipelines): Low pressure pipelines designed to operate at less than or equal to 700 kPa and which delivery commodities (e.g. natural gas) to homes and businesses through mains and service lines.

Distribution Lines (Power): Electric power lines designed to operate at less than 69 kV nominal voltage.

Exception: A proposed utility installation or component of an installation that does not follow or meet the Ministry's policies and/or minimum standards, and which requires further review and approval on specified terms and conditions by appropriate Ministry authorities.

Expressway: A divided highway for through traffic with two or more lanes in each direction of travel with access only by public road intersections and frequently with grade separations at major intersections.

Fill Slope: The graded downhill slope beyond the outside edge of the shoulder down to the ditch in a cut or to the natural ground on a fill. Sometimes referred to as a "fore slope" or "foreslope."

Freeway: A divided primary highway for through traffic with two or more lanes in each direction of travel with access via interchanges only. Typically, freeways have a posted speed limit of 80 m/h or greater.

High Pressure Pipelines: Pipelines designed to operate at pressures greater than 2,070 kPa (300 psi).

High Pressure Water Lines: Water lines which are designed to operate at pressures greater than 1,380 kPa (200 psi).

Highway: See "Highway Right-of-Way".

Highway Prism: The full width of the constructed roadway including travelled road surface, shoulders, containment slopes such as ditches, cuts and fills. Sometimes referred to as "road prism."

Highway Right-of-Way: The entire width of the land designated as "provincial public highway" as per the Transportation Act and which is under the jurisdiction of the Ministry of Transportation and Infrastructure.

Intermediate Pressure Pipelines: Pipelines designed to operate at pressures greater than 700 kPa (100 psi) and up to 2,070 kPa (300 psi).

kPa: Abbreviation of "kilopascal" meaning one thousand pascals. Pascals are used to measure pressure.

kV: Abbreviation of "kilovolt" meaning one thousand volts.

Low Pressure Pipelines: Pipelines designed to operate at pressures less than or equal to 700 kPa (100 psi), including lateral connections from gas distribution mains to customers.

Low Volume Road (LVR): A road with an Average Annual Daily Traffic (ADT) of 200 or less, and whose service functions are oriented toward rural road systems.

Minimum Vertical Clearance: Minimum vertical clearance for road crossings is measured from the roadway or pavement crown directly under the crossing under conditions of maximum sag. Minimum vertical clearance for lines which parallel the highway is measured from the ground line directly below the wire under conditions of maximum sag.

Minister: Means the Minister of Transportation and Infrastructure, or the Minister with the responsibility for provincial highways as per the Transportation Act.

Ministry: Means the Ministry of Transportation and Infrastructure, or the ministry with the responsibility for provincial highways, unless it is explicitly stated to be some other ministry by inclusion of the other ministry's full name or normal abbreviation.

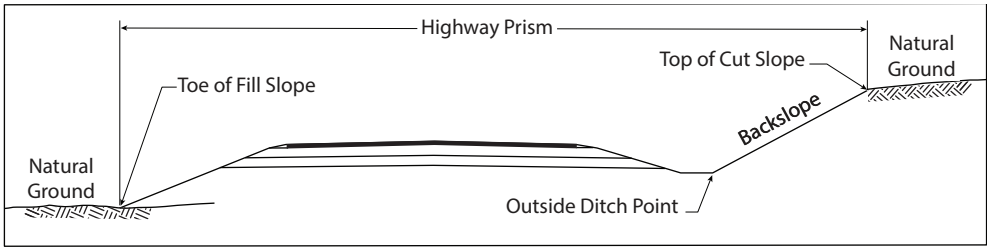
Ministry Structure: Bridges, tunnels, and culverts belonging to the Ministry. May also mean towers, retaining walls, lighting poles and other structures owned by the Ministry as the context provides.

Nominal Voltage: The reference voltage assigned to electrical infrastructure for the purpose of conveniently designating its voltage class. The actual voltage at which the electrical infrastructure operates can vary from the nominal within a range that permits satisfactory operation.

Numbered Highways: Numbered primary highways, secondary highways, and major roads which generally place more emphasis on mobility for through traffic. An official list of numbered highways in British Columbia is available on the Ministry's website: https://www2.gov.bc.ca/gov/content/transportation/transportation-reports-and-reference/reference-information/numbered-routes.

Offset: As the context provides, the prescribed distance utility infrastructure must be from the travelled way, highway prism, edge of right-of-way, etc.

Outside Ditch Point: The ditch point furthest from the roadway that intercepts the back slope.



Permit: A written authorization pursuant to section 62 of the Transportation Act authorizing a utility organization to install, operate, and maintain utility infrastructure within highway right-of-way.

Posted Speed: Refers to the maximum speed limit on a section of highway as per section 146 of the Motor Vehicle Act. The posted speed is generally displayed using white speed limit signs.

Standard Proctor Density: Standard Proctor Density is a standard measure of density, to be determined by the current ASTM D 698 Test Method.

Protocol Agreement: A document that reflects discussions and agreement between the Ministry and a particular utility organization about matters of mutual interest, such as procedures for addressing matters that arise in connection with utility works on provincial highways. A protocol agreement on its own does not constitute an authorization under section 62 of the Transportation Act for the occupation and use of a provincial highway. For that, a Ministry permit or other prescribed form of authorization is required.

Record Drawing: Plans which show the actual installation location of the utility after necessary re-design or in the field adjustments to the design drawings.

Section 4 Road: An informal term referring to a road established pursuant to Section 4 of the former Highway Act.

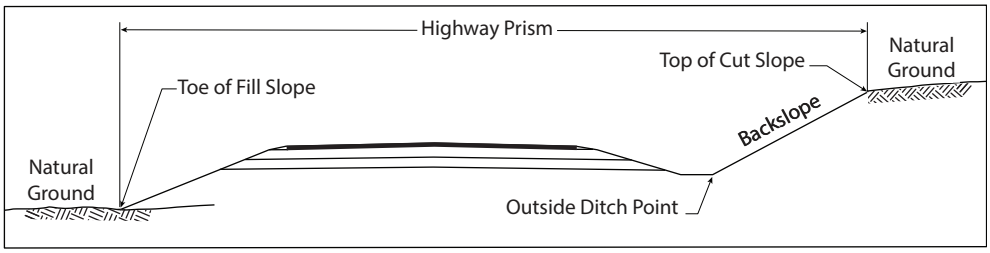
Section 42 Road: An informal term used to describe unsurveyed publicly-travelled potential roads on private land that have not been designated by the Supreme Court of British Columbia as public roads but for which there might or might not be grounds for such a designation.

Seismic Design Guidelines: ATC-6 Seismic Design Guidelines for Highway Bridges (Applied Technology Council https://www.atcouncil.org/) or AASHTO Standard Specifications for Seismic Design of Highway Bridges or the Canadian Highway Bridge Design Code (CSA S6) 2000 edition or later.

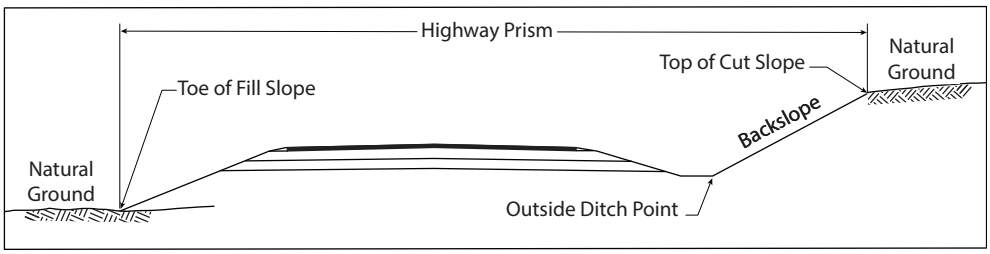
Service Connections: Connections from a utility distribution system used to supply commodities such as water, power, natural gas, or telecommunications to individual homes and businesses.

Setback: Setback refers to the distance from the travelled portion of the roadway to a feature on or above the surface of the ground.

Toe of a Fill: The point where the roadway embankment intercepts the natural ground.



Top of a Cut: The point where the backslope intercepts the natural ground.



Standard Specifications for Highway Construction: The Standard Specifications for Highway Construction is a document published by the Ministry of Transportation and Infrastructure and regularly updated. It serves as a standard reference in construction contracts, and are applied consistently with the procurement methodology used. The specifications outline minimum requirements for highway construction in British Columbia. The Standard Specifications for Highway Construction are available on the Ministry's website.

Traffic Management Plan: The Prime Contractor's project-specific plan that details the strategies for protecting workers and safely and efficiently moving road users through the work zone, including any requirements of the road authority. For more information, see the latest edition of the Traffic Management Manual for Work on Roadways available on the Ministry's website: https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/traffic-engineering-safety/trafficmanagementmanual.

Transmission Lines (Pipelines): Intermediate and high pressure pipelines designed to operate at pressures greater than 700 kPa and which move oil and gas over long distances.

Transmission Lines (Power): Electric power lines designed to operate at a nominal voltage of 69 kV or greater.

Utility: Means either "utility infrastructure" or "utility organization" as the context provides.

Utility Organization: Any company or entity, whether publicly-owned or investor-owned, and whether regulated or unregulated, that installs, operates, and maintains utility infrastructure within highway right-of-way.

Utility Infrastructure: Means any physical line, facility, system, equipment, installations, or appurtenances owned and operated by a utility organization to facilitate the transmission, distribution, or deliver of electricity, communications and intelligence, gas, oil and petroleum products, water, sewage, or any other similar commodity, and includes underground, surface, and overhead infrastructure.

Within and Parallel: When used in phrases such as "within and parallel to highway right-of-way," means utility infrastructure installed longitudinally within the highway right-of-way and which generally parallels the travelled way of the highway.

Work Zone: An area of roadway or right-of-way where road users are warned of potentially changing conditions through to the resumption of regular traffic flow. The work zone is typically defined to extend from the first traffic control device to the last traffic control device as seen by the travelling public.

APPENDIX A – REGION AND DISTRICT CONTACT INFORMATION

Regional and District contact information, including District sub-area office contact information, is also available on the Ministry's website at the following link: https://www2.gov.bc.ca/gov/content/transportation/funding-engagement-permits/highway-event-permits/regional-district-contacts

SOUTH COAST REGION

Regional Office

Telephone: 604-527-2221
Facsimile: 604-527-2222
310 – 1500 Woolridge Street
Coquitlam BC, V3K 0B8

District Offices

Lower Mainland District Office
Telephone: 604 527-2221
Facsimile: 604 527-2222
310 – 1500 Woolridge Street
Coquitlam BC, V3K 0B8

Vancouver Island District Office
Telephone: 250 751-3246
Facsimile: 250 751-3289
3rd Floor – 2100 Labieux Road Nanaimo BC, V9T 6E9

SOUTHERN INTERIOR REGION

Regional Office

Telephone: 250 828-4220
Facsimile: 250 828-4229
447 Columbia Street
Kamloops BC, V2C 2T3

District Offices

Cariboo District Office
Telephone: 250 398-4510
Facsimile: 250 398-4454
301 – 640 Borland Street
Williams Lake BC, V2G 4T1

Okanagan Shuswap District Office
Telephone: 250 712-3660
Facsimile: 250 712-3669
300 – 1358 St. Paul Street
Kelowna BC, V2Y 2E1

Rocky Mountain District Office
Telephone: 250 426-1500
Facsimile: 250 426-1523
129 S 10th Avenue
Cranbrook BC, V1C 2N1

Thompson Nicola District Office
Telephone: 250 828-4002
Facsimile: 250 371-3848
447 Columbia Street
Kamloops BC, V2C 2T3

West Kootenay District Office
Telephone: 250 354-6400
Facsimile: 250 354-6547
4th Floor – 310 Ward Street
Nelson BC, V1L 5S4

NORTHERN REGION

Regional Office

Telephone: 250 565-6185
Facsimile: 250 565-6065
213 - 1011 4th Avenue
Prince George BC, V2L 3H9

District Offices

Bulkley-Stikine District Office
Telephone: 250 847-7403
Facsimile: 250 847-7219
3726 Alfred Avenue
Smithers BC, V0J 2N0

Fort George District Office
Telephone: 250 565-4410
Facsimile: 250 565-6820
360 – 1011 4th Avenue
Prince George BC, V2L 3H9

Peace District Office
Telephone: 250-787-3237
Facsimile: 250-787-3279
300 – 10003 110th Avenue
Fort St John BC, V1J 6M7

Skeena District Office
Telephone: 250 615-3970
Facsimile: 250 615-3963
4825 Keith Avenue
Terrace BC, V8G 1K7

APPENDIX B – CLEAR ZONE TABLES

The following tables are found in section 600 of the B.C. Supplement to TAC Geometric Design Guide and are used to determine the applicable clear zone. The full document is available on the Ministry's website at the following link: https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/highway-design-survey/tac-bc

Table 620.A Suggested (¥) Design Clear Zone Distances** (see note 1) **in metres for New Construction and Reconstruction Projects on Rural Highways (¥¥)

Design Speed (Km/h)	Design Year AADT (see note 2)	Front Slopes (Fill)			Back Slopes (Cut) (see note 4)		
		6:1 or Flatter	5:1 to 4:1	3:1	3:1	5:1 to 4:1	6:1 or Flatter
< 70	200 <AADT< 750 (see note 3)	2.0 – 3.0	2.0 – 3.0	**	2.0 – 3.0	2.0 – 3.0	2.0 – 3.0
	750 – 1500	3.0 – 3.5	3.5 – 4.5	**	3.0 – 3.5	3.0 – 3.5	3.0 – 3.5
	1501 – 6000	3.5 – 4.5	4.5 – 5.0	**	3.5 – 4.5	3.5 – 4.5	3.5 – 4.5
	> 6000	4.5 – 5.0	5.0 – 5.5	**	4.5 – 5.0	4.5 – 5.0	4.5 – 5.0
70 – 80	200 <AADT< 750 (see note 3)	3.0 – 3.5	3.5 – 4.5	**	2.5 – 3.0	2.5 – 3.0	3.0 – 3.5
	750 - 1500	4.5 – 5.0	5.0 – 6.0	**	3.0 – 3.5	3.5 – 4.5	4.5 – 5.0
	1501 - 6000	5.0 – 5.5	6.0 – 8.0	**	3.5 – 4.5	4.5 – 5.0	5.0 – 5.5
	> 6000	6.0 – 6.5	7.5 – 8.5	**	4.5 – 5.0	5.5 – 6.0	6.0 – 6.5
90	200 <AADT< 750 (see note 3)	3.5 – 4.5	4.5 – 5.5	**	2.5 – 3.0	3.0 – 3.5	3.0 – 3.5
	750 - 1500	5.0 – 5.5	6.0 – 7.5	**	3.0 – 3.5	4.5 – 5.0	5.0 – 5.5
	1501 - 6000	6.0 – 6.5	7.5 – 9.0	**	4.5 – 5.0	5.0 – 5.5	6.0 – 6.5
	> 6000	6.5 – 7.5	8.0 – 10.0*	**	5.0 – 5.5	6.0 – 6.5	6.5 – 7.5
100	200 <AADT< 750 (see note 3)	5.0 – 5.5	6.0 – 7.5	**	3.0 – 3.5	3.3 – 4.5	4.5 – 5.0
	750 - 1500	6.0 – 7.5	8.0 – 10.0*	**	3.5 – 4.5	5.0 – 5.5	6.0 – 6.5
	1501 - 6000	8.0 – 9.0	10.0 – 12.0*	**	4.5 – 5.5	5.5 – 6.5	7.5 – 8.0
	> 6000	9.0 – 10.0*	11.0 – 13.5*	**	6.0 – 6.5	7.5 – 8.0	8.0 – 8.5
≥ 110	200 <AADT< 750 (see note 3)	5.5 – 6.0	6.0 – 8.0	**	3.0 – 3.5	4.5 – 5.0	4.5 – 5.0
	750 - 1500	7.5 – 8.0	8.5 – 11.0*	**	3.5 – 5.0	5.5 – 6.0	6.0 – 6.5
	1501 - 6000	8.5 – 10.0*	10.5 – 13.0*	**	5.0 – 6.0	6.5 – 7.5	8.0 – 8.5
	> 6000	9.0 – 10.5*	11.5 – 14.0*	**	6.5 – 7.5	8.0 – 9.0	8.5 – 9.0

(¥) The designer may use lesser values than the suggested distances in this table only if these lesser values are justified using a cost-effectiveness analysis as outlined in section 620.07. The Design Clear Zone Inventory form in Figure 620.B must be filled-in by the designer and included in the design folder.

(¥¥) Rural highways are typically open ditch. Urban highways typically have curb and gutter with enclosed drainage. Refer to section 620.12 for a discussion of clear zone applied to an urban environment.

(*) Clear zones may be limited to 9.0 metres for practicality and to provide a consistent roadway template if previous experience with similar projects or designs indicates satisfactory performance.

(**) Since recovery is less likely on the unshielded, traversable 3:1 slopes, fixed objects should not be present in the vicinity of the toe of these slopes. Recovery of high-speed vehicles that encroach beyond the edge of the shoulder may be expected to occur beyond the toe of slope. Determination of the width of the recovery area at the toe of slope should take into consideration right-of-way availability, environmental concerns, economic factors, safety need and collision history. Also, the distance between the edge of the through travel lane and the beginning of the 3:1 slope should influence the recovery area provided at the toe of slope. While the application may be limited by several factors, the foreslope parameters which may enter into determining a maximum desirable recovery area are illustrated in Figure 620.A.

Notes:

1. All distances are measured from the outer edge of the through traveled lane. Where a site specific investigation indicates a high probability of continuing crashes, or such occurrences are indicated by crash history, the designer may provide clear zone distances greater than the clear zone shown in Table 620.A.

2. For clear zones, the "Design Year AADT" will be total AADT for both directions of travel for the design year. This applies to both divided and undivided highways.

3. For AADT≤200, the front slope is 2:1 or flatter, the back slope is 1.5:1 or flatter. The setback to fixed objects is the greater of the following two distances: - 4.0 m from the outside edge of the traveled lane or - 2.0 m from the lowest ditch point.

4. The values for "back slopes" only apply to a section where the toe of the slope is adjacent to the shoulder (enclosed drainage).

5. The values in the table apply to tangent sections of highway. Refer to Table 620.B for adjustment factors on horizontal curves.

6. Refer to the TAC Geometric Design Guide for Canadian Roads for worked examples of calculations.

Table 620.B Horizontal Curve Adjustment Factors for Clear Zone Distances (Kcz)

Radius (m)	Design Speed (km/h)					
	60	70	80	90	100	110
900	1.1	1.1	1.1	1.2	1.2	1.2
700	1.1	1.1	1.2	1.2	1.2	1.3
600	1.1	1.2	1.2	1.2	1.3	1.4
500	1.1	1.2	1.2	1.3	1.3	1.4
450	1.2	1.2	1.3	1.3	1.4	1.5
400	1.2	1.2	1.3	1.3	1.4	
350	1.2	1.2	1.3	1.4	1.5	
300	1.2	1.3	1.4	1.5	1.5	
250	1.3	1.3	1.4	1.5		
200	1.3	1.4	1.5			
150	1.4	1.5				
100	1.5					

Notes:

1. Adjustments apply to the outside of a horizontal curve only.
2. No adjustment is warranted for curves that have a radius exceeding 900 metres.
3. The applicable clear zone distance on a horizontal curve is given by the following formula: CZc = (Kcz)(CZt) where: CZc = clear zone distance on the outside of a curve in metres. Kcz = curve adjustment factor from Table 620.B. CZt = clear zone distance used on a tangent section as per Table 620.A. Rounding of the calculated clear zone distance is to the next higher 0.5 metre increment.
4. Use straight-line interpolation to calculate the adjustment factor for a curve radius other than those listed in the table.
5. The transition from CZt on tangent to CZc in the curve is done by gradually increasing the clear zone over the length of the spiral.
6. Also refer to the TAC Geometric Design Guide for Canadian Roads for worked examples of calculations.

APPENDIX C – TECHNICAL CIRCULARS

The full text of several Technical Circulars related to utilities on highways are provided in this section for convenience.

The Technical Circulars in this section are:

- Technical Circular T-12/94 – Single Pole Line Policy
- Technical Circular T-08/09 – Use of Herbicides for Invasive Plant Control
- Technical Circular T-03/14 – Update to the Ministry of Transportation and Highways Utility Policy Manual
- Technical Circular T-05/09 – Vertical Inlaid Fibre Systems

All of the Ministry's Technical Circulars are also available on the Ministry's website at the following link: https://www2.gov.bc.ca/gov/content/transportation/transportation-infrastructure/engineering-standards-guidelines/technical-circulars

Technical Circular T-12/94 – Single Pole Line Policy

August 29, 1994

To: All Headquarters Directors
All Regional Managers
All District Highways Managers
Professional Services, Planning and Major Projects

Subject: SINGLE POLE LINE POLICY

Reference: Utility Policy Manual

Background:

The Ministry is experiencing ever increasing demands for right-of-way use, both for highway construction and for other uses such as utility installations. That pressure is not confined to urban areas where right-of-way is limited and the cost of additional property can be extremely high. It is also being felt in areas where the Clear Zone standard will have a substantial impact on the availability and use of existing right-of-way.

The single pole or "shared support structure" policy is intended to support right-of-way management objectives through better joint planning of facilities, promote highway safety, and ensure a more efficient use of limited highway right-of-way. It is the Ministry's intention to continue to provide utility companies with access to highway right-of-way where feasible and desirable, and where the public interest is best served.

Procedure:

The policy contains the following elements.

- The single pole line policy will apply to all classes of highway where pole lines are permitted.
- No more than one pole line will generally be permitted on a section of highway right-of-way.
- Exceptions may be made in certain conditions. These generally include:
  - Where poles are required for service connections
  - Where a second pole line is required to service adjacent property, and a limited number of poles is required over a short distance.
  - Where the Electrical Safety Act restricts the installation of utilities on a single pole.
  - Where the utility demonstrates that all options have been considered and it is in the public interest to construct a second pole line.
- Where a pole line already exists but is not used for electric power lines, a permit may be issued to a electric power utility to install a second pole line. All subsequent installations or replacements must make use of the electrical pole line. The Ministry will not compensate utility companies for relocations onto new pole lines.

- Pole permits may be issued by the Ministry on a limited, or interim basis for pole replacements to a single pole line. Replacements will be considered on the basis of the physical condition of the plant.
- Single pole lines must be designed and constructed in such a manner that subsequent parties will be provided equitable access to the pole line.
- Joint venture or contact agreements must not subject other parties to unfair and uncompetitive conditions, nor should pole line providers reserve space unreasonable for future needs. The Ministry reserves the right to invoke a dispute resolution process of its choice to settle an disagreements which may arise as a result of this policy.
- All pole lines located within the area of a new highway construction project will be consolidated on a single pole line as part of the highway construction project.

This policy is to become effective immediately.

Technical Circular T-08/09 – Use of Herbicides for Invasive Plant Control

Technical Circular T–08/09
July 30, 2009

To: All Headquarters Directors: Operations, Planning and Major Projects
All Regional Directors
All District Highways Managers Transportation

Subject: USE OF HERBICIDES FOR INVASIVE PLANT CONTROL

Purpose:
This Technical Circular amends the policy directive issued August, 1992, regarding chemical application for vegetation and brush control.

Background:

In 1992, the Ministry discontinued the use of herbicides by its contractors for all programs except noxious weed control, i.e. – for the control of introduced plants that are particularly aggressive in growth habit, and that cause environmental degradation and economic impact.

This treatment option was retained for the program in order to comply with the *Weed Control Act*, and its *Regulations*, requiring occupiers of land to control designated noxious weeds. The selective and timely application of herbicides on these weeds remains the most practical and effective method for dealing with new infestations, and for controlling established plants that are resistant to non-chemical alternatives such as cutting, pulling and digging.

In recent years, the general term "invasive plant" has been used to include not only designated noxious weeds, but other troublesome plants that have been introduced into the province, and that exhibit similar undesirable characteristics. The amended policy accommodates the discretionary use of herbicides on these plants as well, and allows MOTI to be more effective in its work with other ministries when implementing "Early Detection, Rapid Response" plans for new invasives.

However, while the range of weeds potentially treated may be larger, the overall intent of the program remains unchanged. Herbicide use is still limited to the treatment of invasive plants deemed to be detrimental to ecosystems, and the work will be ancillary to existing non-chemical control methods such as mowing.

Policy:

The use of herbicides for all Ministry vegetation management programs will be limited to the control of invasive plants only as determined and approved by the Office of the Chief Engineer, in consultation with Headquarters and Regional Environmental Services Managers.

Decisions to use herbicide will be based on the net benefit of this control method in consideration of:

- Context of the specific weed site
- Alternate control methods available
- Pest Management Plan constraints
- Local Stakeholder input

Signed by
Dirk Nyland, P. Eng, Chief Engineer
Ministry of Transportation and Infrastructure, Engineering Branch

Technical Circular T-03/14 – Update to the Ministry of Transportation and Highways Utility Manual

Technical Circular T–03/04

May 6, 2014

To: All HQ Directors: Operations, Planning and Major Projects
All Regional Directors
All District Managers, Transportation
All Electrical Engineering Staff
All Managers, Electrical Services

Subject: Update to the Ministry of Transportation and Highways Utility Policy Manual (1995)

Purpose:

To clarify the offset requirements for overhead high voltage transmission lines up to and including 287 kV (phase to phase) along highways. This circular supplements the Ministry's Overhead Power and Communications Line policy contained in Chapter 10 of the Ministry's Utility Policy Manual.

Background:

The Ministry's Utility Policy Manual (1995), Chapter 10, defines policy for overhead power and communication lines along highways. Clause 1 of the Policy section states that the Ministry generally does not permit overhead transmission lines of voltages at or above 60 kV phase to phase within the highway right-of-way due, in part, to electrical interference caused by hight voltage transmission lines. The Ministry has commissioned and accepted two reports: *Review of Overhead Transmission Lines in Highway Right-of-Ways (2001)* which address 69 kV and 138 kV and *The Effects of Highway Voltage Transmission Lines in Proximity of Highways (2005)* which addresses 230 kV and 287 kV. These reports conclude that transmission lines up to and including 287 kV phase to phase could be accommodated within highway right-of-way provided clearance requirements are met.

Discussion:

High voltage transmission lines cause corona discharge, radio interference and audio noise through generation of electric and magnetic fields. The impact of these effects is proportional to the voltage level and distance to the transmission line. In order to reduce these effects to acceptable levels, transmission lines must be located sufficient distance from the highway.

As the electrical interference is cause by the conductor running between the supporting structures, it is the distance from the conductor to the highway that is the main consideration. The conductor will move, or swing, when subjected to wind load and the amount it swings is dependent on th design of the transmission line. Factors determining the amount of conductor swing include span between structures, conductor sag, and conductor type. The design of the supporting structure will also impact the clearance distance. Due to these design variances, it is not possible to specify a clearance distance between a transmission line structure and a highway based upon voltage alone.

Guidelines:

Clearance distances for transmission lines in proximity to highways must be calculated on a case-by-case basis. The Ministry's Utility Policy Manual and highway design guidelines shall take precedence when determining the location of any transmission line structure.

High voltage transmission lines in proximity to highways must be in compliance with:

- BC Hydro Transmission Engineering Standard ES 41-K 3.3 R2 (2013) *Electric and Magnetic Fields, Section 3.3*.
- BC Hydro Transmission Engineering Standard ES 41-K 1.1 R2 *Electrical Clearances for Overhead Transmission Lines*.
- BC Hydro Transmission Engineering Standard ES 41-C *Right-of-Way Dimensions for New Overhead Transmission Lines*.
- BC Hydro Transmission Engineering Standard ES 41-K, Section 4.1, *Transmission Line Radio Interference*.

Where clearances stated in the Ministry's design standards and BC Hydro's transmission engineering standards differ, the greater clearance shall be used.

Policy:

In addition to fulfilling all other requirements of the Ministry of Transportation and Infrastructure District permitting process, transmission lines with voltages up to and including 287 kV phase to phase may be accommodated within highway right-of-way provided:

1. The transmission line structures are installed with clearance distances based upon the criteria stated in this technical circular.
2. Compliance with the engineering standards listed is confirmed by an Engineer of Record experienced in high voltage transmission line design.
3. The installation has been approved by the Ministry of Transportation and Infrastructure Regional Director in consultation with the Chief Engineer.

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Signed by
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Technical Circular T-05/09 – Vertical Inlaid Fibre Systems

Technical Circular T–05/09
Date: April 22, 2009

To: All HQ Directors: Operations, Planning and Major Projects
All Regional Directors
All District Managers

Subject: Vertical Inlaid Fibre Systems

Background:
Vertical Inlaid Fibre (VIF) is a fibre optic cable deployment system which consists of a narrow "ribbon" conduit technology that is installed in the roadway at a shallow depth using saw cut technology. This technique provides an alternative to traditional trench technology. The major components typically consist of:

- Vertical Deflecting Conduit (VDC) which is approximately 10mm wide and up to 84mm high. The system is designed for placement into a 12.5mm wide saw cut to a depth of 300mm and can accommodate several fibre optic cables.
- Vertical Inlaid Fibre (VIF) Cable at 4mm in diameter which are placed in the VDC
- Cylindrical Access Node (CAN) which is approximately 230mm in diameter by 500mm in height and is designed to house slack cable for maintenance and branching. CANs are replaced to provide breakout points to current applications and where network expansion is anticipated with a typical spacing of 200 to 300 metres.

Policy:
The Ministry has determined that this use may be accommodated within the roadway prism but outside the paved surface where there are no existing utility structures, including utility poles or telecommunications conduit, that can be used for cable location and attachment; and, where the proposed use complies with the technical criteria contained in this circular. The principles of shared use of both overhead and underground utility structures contained the Technical Circular 12/94, "Single Pole Line Policy" apply.

Scope and Application:
It has been determined that the installation method used for this technology in the paved portion of the roadway will have an unavoidable impact on pavement structures. Further, the installation of the CANs will complicate future rehabilitation and maintenance work. In detail, the VIF systems employ an open saw cut technology to install continuous VDC. The cut is backfilled and a binding agent is used to seal the cut. Anticipated impacts of the VIF systems include differential settlement and insufficient strength of the binding agent that may result in pavement cracking which will impact the life of the pavement structure and ride quality.

Should it be necessary to install this system within the roadway prism, the following locations and standards are to be applied when an application to install and operate a VIF system is granted:

Open Shoulder Roadways:

- Installation will be within a gravel shoulder with a minimum 50mm offset from the pavement edge for any class of highway. Saw cut technology will be used within a minimum trench depth of 300mm measured from the top of the VDC to the ground surface.
- No longitudinal installation within the pavement is permitted.

- Transverse pavement cuts will only be permitted on low volume roads with an average Daily Traffic (ADT) not exceeding 200 vehicles (TAC Geometric Design 2007 edition)
- Transverse pavement cuts should only be considered where the Ministry Representative has determined that other options such as the use of adjacent utility poles, telecommunications conduit are not available or directional drilling is impractical.
- Transverse pavement cuts will be installed through the use of saw cut technology, backfilled and capped, to match existing pavement conditions with a Ministry approved high grade patching compound.
- Transverse cuts should be limited both in the number of cuts and, where possible to intersections.
- Tracer material will be installed in all trenches prior to backfilling.
- CANs will be installed inline with the VDC when placed in the gravel shoulder installed to a minimum of 100mm below the existing grade to avoid damage and conflict with highway maintenance equipment.
- CANs will be installed at grade within pavement surface (typically a transverse crossing), however, whenever possible placement should be in the gravel shoulder.

Roadways with Enclosed Drainage (concrete curb and gutter):

- Preferred location for longitudinal VDC installations will be between the concrete curb and sidewalk.
- Gravel shoulders will be used for the installation
- Transverse pavement cuts should only be considered where the Ministry Representative has determined that options such as the use of adjacent utility poles or telecommunications conduit are not available or directional drilling is impractical.
- Offsets and depth or bury will be the same as open shoulder highways

The Ministry representative will make a final determination on the location and number of transverse cuts based on local conditions.