

ARIZONA DEPARTMENT OF TRANSPORTATION



**GUIDELINE FOR ACCOMMODATING
UTILITIES
ON
HIGHWAY RIGHTS-OF-WAY**

Prepared by the Utility and Railroad Engineering Section

Updated August 2015

ENGLISH UNITS

TABLE OF CONTENTS

1. GUIDELINE ON THE ACCOMMODATIONS OF UTILITIES WITHIN STATE OF ARIZONA HIGHWAYS RIGHT-OF-WAY	1
1.1. INTRODUCTION	1
1.1.1. BACKGROUND	1
1.1.2. UTILITY ACCOMMODATION	1
1.1.3. PRIOR RIGHTS	1
1.2. AUTHORITY OF THE DIRECTOR	1
1.3. STATEMENT OF GUIDELINE	2
1.3.1. UTILITIES TO WHICH GUIDELINE APPLIES	2
1.3.2. HIGHWAY UTILITIES	2
1.3.3. PROTECTION OF THE HIGHWAY	2
1.4. NEW UTILITY INSTALLATION ALONG HIGHWAYS	2
1.4.1. UNCONTROLLED ACCESS HIGHWAYS AND OUTSIDE OF CONTROL OF ACCESS ON CONTROLLED ACCESS HIGHWAYS	2
1.4.2. INSIDE CONTROL OF ACCESS	3
1.5. EXISTING UTILITIES ALONG PROPOSED CONTROLLED ACCESS HIGHWAYS	3
1.5.1. EXISTING UTILITIES ON NEW CONTROLLED ACCESS HIGHWAYS	3
1.5.2. EXISTING UTILITIES ON NEW CONTROLLED ACCESS HIGHWAYS WITH FRONTAGE ROADS	4
1.5.3. LIMITED RIGHT-OF-WAY	4
1.5.4. UTILITY LOCATION	4
1.5.5. PREFERRED UTILITY LOCATION	4
1.6. UTILITY CORRIDORS	4
1.7. UTILITIES THROUGH OR AFFIXED TO EXISTING BRIDGES	4
1.7.1. EXISTING UTILITY ON EXISTING BRIDGE	4
1.7.2. NEW UTILITY ON EXISTING BRIDGE	5
1.8. UTILITIES THROUGH OR AFFIXED TO NEW BRIDGES	5
1.8.1. UTILITIES ON NEW BRIDGES	5
1.8.1.1. FLEXIBLE LINES	5
1.8.1.2. RIGID LINES	5
1.9. UTILITIES CROSSING HIGHWAYS	6
1.9.1. NEW UTILITY CROSSINGS	6
1.9.1.1. MAINTENANCE OUTSIDE CONTROL OF ACCESS	6
1.9.1.2. OVERHEAD UTILITY CROSSING VERTICAL CLEARANCE	6
1.9.1.3. OVERHEAD UTILITY CROSSINGS IN INTERCHANGE AREAS	6
1.9.1.4. OVERHEAD UTILITY CROSSINGS OUTSIDE OF INTERCHANGE AREAS	6
1.9.1.5. UNDERGROUND UTILITY CROSSINGS	7
1.9.1.6. IRRIGATION DITCHES AND WATER CANALS	7
1.9.1.7. PROVISIONS FOR EXPANSION OF UTILITIES	7
1.9.1.8. UTILITY CROSSING STRUCTURES	7
1.9.1.9. UTILITIES IN DRAINAGE STRUCTURES	7
1.10. UTILITIES IN VEHICULAR TUNNELS	7
1.11. PERMIT FOR UTILITY MAINTENANCE	8

1.11.1. ACCESS FOR MAINTAINING UTILITIES ON CONTROLLED ACCESS HIGHWAYS	8
1.11.2. CONTROLLING UTILITY ACCESS	8
1.11.3. EMERGENCY MAINTENANCE	8
1.12. CONSTRUCTION AND LOCATION DETAILS	8
1.12.1. PLANS REVIEW	8
1.12.2. TRAFFIC CONTROL	8
1.12.3. INTERFERENCE WITH ADOT CONTRACTOR	9
1.13. UTILITY PERMIT REQUIREMENTS	9
1.13.1. INSTALLATION DRAWINGS and INSTALLATION DRAWING BOND	9
1.13.2. LIABILITY	9
1.13.3. INSURANCE	9
1.14. LEASE OF ADOT RIGHTS-OF-WAY OF CONTROLLED ACCESS HIGHWAYS	10
1.14.1. LEASE ON CONTROLLED ACCESS HIGHWAYS	10
1.14.2. LONGITUDINAL CORRIDOR OR TRANSVERSE STRUCTURE FOR LEASE	10
1.15. SPECIAL CASES AND APPEALS	10
1.15.1. APPEALS	10
1.15.2. APPEAL PROCESS	10
1.15.3. FINAL APPEAL	10
2. GENERAL INFORMATION	11
2.1. DEFINITION OF TERMS	11
2.2. AUTHORITY	13
2.2.1. DIRECTOR'S AUTHORITY	13
2.2.2. ENCROACHMENT	13
2.2.3. PERMIT AUTHORITY	13
2.3. CONDITIONS FOR UTILITY PERMITS WITHIN THE HIGHWAY RIGHT-OF-WAY	13
2.3.1. PERMIT REQUIRED	13
2.3.2. NON-TRANSFERABILITY OF PERMIT	13
2.3.3. ACCEPTANCE OF PROVISIONS	13
2.3.4. PRECEDENT	13
2.3.5. NOTICE PRIOR TO STARTING WORK	13
2.3.6. POSTING PERMIT	14
2.3.7. PROTECTION OF TRAFFIC	14
2.3.8. STORAGE OF MATERIAL AND EQUIPMENT	14
2.3.9. RIGHT OF WAY	14
2.3.10. ACCESS	14
2.3.11. CONSTRUCTION	14
2.3.12. ROUTINE MAINTENANCE	15
2.3.13. EMERGENCY CONDITIONS	15
2.3.14. LIABILITY	15
2.3.15. ADOT PLANS REVIEW	15
2.3.16. REQUEST FOR PERMITS	15
2.3.17. INSTALLATION DRAWING	16
2.3.18. INSTALLATION DRAWING BOND	16
2.3.19. NON-COMPLIANCE	16
2.4. ADEQUATE SPACE IN RIGHT-OF-WAY FOR UTILITY ACCOMMODATIONS	16
3. UTILITY GUIDELINES IN CONTROLLED ACCESS HIGHWAY	17

3.1.	ELECTRICAL LINES	17
3.1.1.	CONFLICTS	17
3.1.2.	EXISTING ELECTRIC LINE ALONG PROPOSED CONTROLLED ACCESS HIGHWAYS	17
3.1.3.	POTHOLES	17
3.1.4.	OPEN CUTS	17
3.1.4.1.	BACKFILL MATERIAL	17
3.1.4.2.	PLACEMENT OF BACKFILL	18
3.1.4.3.	COMPACTION OF BACKFILL	19
3.1.4.4.	ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	19
3.1.4.5.	PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	19
3.1.5.	DEPTH OF COVER	20
3.1.6.	CONTROL OF ACCESS	20
3.1.7.	MANHOLES	20
3.1.8.	CROSSINGS	20
3.1.8.1.	ELECTRIC LINES ALONG CROSSROADS	20
3.1.8.2.	OVERHEAD ELECTRIC LINE CROSSINGS	20
3.1.8.3.	UNDERGROUND ELECTRIC LINE CROSSINGS	21
3.1.8.4.	ELECTRIC CABINETS & TRANSFORMERS	21
3.1.9.	ELECTRIC LINES THROUGH OR AFFIXED TO EXISTING BRIDGES	21
3.1.10.	ELECTRIC LINES THROUGH OR AFFIXED TO NEW BRIDGES	22
3.1.10.1.	BRIDGE ENGINEER	22
3.1.11.	JACKING OR BORING	22
3.1.11.1.	WATER BORING	22
3.1.11.2.	BENTONITE SLURRY BORING	22
3.1.11.3.	JACKING OUTSIDE 30 FEET	23
3.1.11.4.	JACKING INSIDE 30 FEET	23
3.1.11.5.	OVERBREAKAGE	23
3.1.12.	LONGITUDINAL ELECTRIC LINES INSIDE THE CONTROL OF ACCESS	23
3.1.13.	LONGITUDINAL ELECTRIC LINES OUTSIDE THE CONTROL OF ACCESS	24
3.1.14.	PREFERRED LONGITUDINAL LOCATION	25
3.1.15.	GATES	25
3.1.15.1.	EXISTING GATES	25
3.1.15.2.	NEW GATES	25
3.2.	WATER & SEWER LINES IN CONTROLLED ACCESS HIGHWAY	26
3.2.1.	CONFLICTS	26
3.2.2.	POTHOLES	26
3.2.3.	OPEN CUTS	26
3.2.3.1.	BACKFILL MATERIAL	26
3.2.3.2.	PLACEMENT OF BACKFILL	27
3.2.3.3.	COMPACTION OF BACKFILL	28
3.2.3.4.	ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	28
3.2.3.5.	PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	28
3.2.4.	DEPTH OF COVER	28
3.2.5.	WATER METER & SERVICE LINES	28
3.2.6.	FIRE HYDRANTS	29
3.2.7.	MANHOLES	29
3.2.8.	CROSSINGS	29
3.2.8.1.	GUIDELINES	29
3.2.8.2.	WATER LINES CROSSINGS	29
3.2.8.3.	GRAVITY SEWER LINES CROSSINGS	30
3.2.8.4.	FORCED SEWER MAINS CROSSING	30
3.2.9.	STORM DRAINS	30
3.2.10.	WATER OR SEWER LINES THROUGH OR AFFIXED TO EXISTING BRIDGES	31
3.2.10.1.	GUIDELINES	31
3.2.10.2.	NEW WATER OR SEWER LINE ON EXISTING BRIDGE	31
3.2.10.3.	SPECIAL CASES	31

3.2.11. WATER OR SEWER LINES THROUGH OR AFFIXED TO NEW BRIDGES	32
3.2.11.1. GENERAL GUIDELINE	32
3.2.11.2. SPECIAL CASES	32
3.2.11.3. PAY ADDITIONAL COSTS	32
3.2.11.4. DESIGN	32
3.2.11.5. POINTS OF ACCESS	32
3.2.11.6. CASING ON STRUCTURES	33
3.2.11.7. BRIDGE ENGINEER	33
3.2.11.8. ATTACHMENTS (Bridge)	33
3.2.12. CASINGS	33
3.2.13. JACKING OR BORING	33
3.2.13.1. WATER BORING	33
3.2.13.2. BENTONITE SLURRY BORING	33
3.2.13.3. JACKING OUTSIDE 30 FEET	34
3.2.13.4. JACKING INSIDE 30 FEET	34
3.2.13.5. OVERBREAKAGE	34
3.2.14. LONGITUDINAL WATER OR SEWER LINES INSIDE THE CONTROL OF ACCESS	34
3.2.15. LONGITUDINAL WATER OR SEWER LINES OUTSIDE OF CONTROL OF ACCESS ON CONTROLLED ACCESS HIGHWAY	35
3.2.16. PREFERRED LONGITUDINAL LOCATION	36
3.2.17. GATES	36
3.2.17.1. EXISTING GATES	36
3.2.17.2. NEW GATES	36
3.3. GAS LINES, PRODUCT LINES (VOLATILE FLUIDS) IN CONTROLLED ACCESS HIGHWAY	37
3.3.1. CODES	37
3.3.2. CONFLICTS	37
3.3.3. POTHoles	37
3.3.4. OPEN CUTS	37
3.3.4.1. BACKFILL MATERIAL	37
3.3.4.2. PLACEMENT OF BACKFILL	38
3.3.4.3. COMPACTION OF BACKFILL	39
3.3.4.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	39
3.3.4.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	39
3.3.5. DEPTH OF COVER	39
3.3.5.1. High Pressure Gas or Volatile Fluids (60 psi and up):	39
3.3.5.2. Low Pressure Gas or Volatile Fluids (under 60psi):	40
3.3.6. FLOATING SLABS - (PROTECTIVE SLAB)	40
3.3.6.1. REINFORCED CONCRETE SLAB	40
3.3.6.2. OWNER OPTION	40
3.3.7. POINTS OF ACCESS	40
3.3.7.1. VENTS AND DRAINS	40
3.3.7.2. VALVES AND MANHOLES	40
3.3.8. CROSSINGS	40
3.3.9. STRUCTURES	41
3.3.10. JACKING OR BORING	41
3.3.10.1. WATER BORING	41
3.3.10.2. BENTONITE SLURRY BORING	41
3.3.10.3. JACKING OUTSIDE 30 FEET	42
3.3.10.4. JACKING INSIDE 30 FEET	42
3.3.10.5. OVERBREAKAGE	42
3.3.11. LONGITUDINAL GAS OR PRODUCT LINES INSIDE THE CONTROL OF ACCESS	42
3.3.12. LONGITUDINAL GAS LINES OR PRODUCT LINES OUTSIDE OF CONTROL OF ACCESS ON CONTROLLED ACCESS HIGHWAYS	43
3.3.13. TUNNELS	44
3.3.14. GATES	44
3.3.14.1. EXISTING GATES	44

3.3.14.2.	NEW GATES	44
3.4.	TELEPHONE AND TV CABLE/ FIBER OPTICS IN CONTROLLED ACCESS HIGHWAY	45
3.4.1.	CONFLICTS	45
3.4.2.	POTHLES	45
3.4.3.	OPEN CUTS	45
3.4.3.1.	BACKFILL MATERIAL	45
3.4.3.2.	PLACEMENT OF BACKFILL	46
3.4.3.3.	COMPACTION OF BACKFILL	47
3.4.3.4.	ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	47
3.4.3.5.	PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	47
3.4.4.	DEPTH OF COVER	47
3.4.5.	MANHOLES	47
3.4.6.	CROSSINGS	48
3.4.6.1.	GENERAL	48
3.4.6.2.	UNDERGROUND	48
3.4.6.3.	VERTICAL CLEARANCE	48
3.4.7.	JACKING OR BORING	48
3.4.7.1.	CONDUIT	48
3.4.7.2.	WATER BORING	48
3.4.7.3.	BENTONITE SLURRY BORING	48
3.4.7.4.	JACKING OUTSIDE 30 FEET	49
3.4.7.5.	JACKING INSIDE 30 FEET	49
3.4.7.6.	OVERBREAKAGE	49
3.4.8.	STRUCTURES	49
3.4.8.1.	DESIGN	50
3.4.9.	LONGITUDINAL TELEPHONE OR TV CABLE	50
3.4.9.1.	INSIDE OF CONTROL OF ACCESS	50
3.4.9.2.	OUTSIDE OF CONTROL OF ACCESS ON CONTROLLED ACCESS HIGHWAYS	51
3.4.10.	PREFERRED LONGITUDINAL LOCATION	52
3.5.	IRRIGATION IN CONTROLLED ACCESS HIGHWAY	53
3.5.1.	CONFLICTS	53
3.5.2.	POTHLES	53
3.5.3.	OPEN CUTS	53
3.5.3.1.	BACKFILL MATERIAL	53
3.5.3.2.	PLACEMENT OF BACKFILL	54
3.5.3.3.	COMPACTION OF BACKFILL	55
3.5.3.4.	ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	55
3.5.3.5.	PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	55
3.5.4.	POINTS OF ACCESS	55
3.5.5.	CROSSINGS	55
3.5.5.1.	OPEN DITCH IRRIGATION:	55
3.5.5.2.	PIPED IRRIGATION	56
3.5.6.	IRRIGATION ON ROADWAY BRIDGES	56
3.5.7.	JACKING OR BORING	56
3.5.7.1.	WATER BORING	56
3.5.7.2.	BENTONITE SLURRY BORING	56
3.5.7.3.	JACKING OUTSIDE 30 FEET	56
3.5.7.4.	JACKING INSIDE 30 FEET	57
3.5.7.5.	OVERBREAKAGE	57
3.5.8.	LONGITUDINAL IRRIGATION DITCHES OR PIPE LINES	57
3.5.8.1.	INSIDE OF CONTROL OF ACCESS	57
3.5.8.2.	OUTSIDE OF CONTROL OF ACCESS	57
4.	UTILITY GUIDELINES IN UNCONTROLLED ACCESS HIGHWAYS	59

4.1.	ELECTRIC LINES IN UNCONTROLLED ACCESS HIGHWAYS	59
4.1.1.	OVERHEAD ELECTRIC LINE CODES	59
4.1.2.	CONFLICTS	59
4.1.3.	POTHOLES	59
4.1.4.	OPEN CUTS	59
4.1.4.1.	BACKFILL MATERIAL	59
4.1.4.2.	PLACEMENT OF BACKFILL	60
4.1.4.3.	COMPACTION OF BACKFILL	61
4.1.4.4.	ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	61
4.1.4.5.	PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	62
4.1.5.	DEPTH OF COVER	62
4.1.6.	GROUND MOUNTED EQUIPMENT	62
4.1.7.	METERS	62
4.1.8.	VAULTS AND MANHOLES	62
4.1.9.	URBAN AREAS	62
4.1.10.	UNDERGROUND ELECTRIC CABLE	63
4.1.11.	CROSSINGS	63
4.1.12.	JACKING AND BORING	63
4.1.12.1.	CONDUIT	63
4.1.12.2.	WATER BORING	63
4.1.12.3.	BENTONITE SLURRY BORING	63
4.1.12.4.	JACKING OUTSIDE 30 FEET	63
4.1.12.5.	JACKING INSIDE 30 FEET	64
4.1.12.6.	OVERBREAKAGE	64
4.1.13.	LONGITUDINAL ENCROACHMENTS	64
4.2.	WATER & SEWER LINES IN UNCONTROLLED ACCESS HIGHWAYS	66
4.2.1.	CONFLICTS	66
4.2.2.	POTHOLES	66
4.2.3.	OPEN CUTS	66
4.2.3.1.	BACKFILL MATERIAL	66
4.2.3.2.	PLACEMENT OF BACKFILL	67
4.2.3.3.	COMPACTION OF BACKFILL	68
4.2.3.4.	ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	68
4.2.3.5.	PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	68
4.2.4.	DEPTH OF COVER	69
4.2.5.	WATER METERS	69
4.2.6.	FIRE HYDRANTS	69
4.2.7.	MANHOLES	69
4.2.8.	CROSSINGS	69
4.2.9.	STORM DRAINS	69
4.2.10.	WATER OR SEWER LINES THROUGH OR AFFIXED TO EXISTING BRIDGES	69
4.2.10.1.	GENERAL	69
4.2.10.2.	AFTER HIGHWAY BRIDGE IMPROVEMENT	70
4.2.10.3.	SPECIAL CASES	70
4.2.11.	JACKING OR BORING	70
4.2.11.1.	WATER BORING	70
4.2.11.2.	BENTONITE SLURRY BORING	70
4.2.11.3.	JACKING OUTSIDE 30 FEET	71
4.2.11.4.	JACKING INSIDE 30 FEET	71
4.2.11.5.	OVERBREAKAGE	71
4.2.12.	WATER OR SEWER LINES THROUGH OR AFFIXED TO NEW BRIDGES	71
4.2.12.1.	GENERAL GUIDELINE	71
4.2.12.2.	SPECIAL CASES	71
4.2.12.3.	UTILITY OWNER PAY	72
4.2.12.4.	DESIGN	72
4.2.12.5.	ACCESS	72

4.2.12.6.	CASINGS	72
4.2.12.7.	BRIDGE ENGINEER	72
4.2.12.8.	ATTACHMENTS (Bridge)	72
4.2.13.	LONGITUDINAL ENCROACHMENTS	72
4.2.13.1.	GUIDELINES	72
4.3.	GAS LINES & PRODUCT LINES (VOLATILE FLUIDS) IN UNCONTROLLED ACCESS HIGHWAYS	74
4.3.1.	GAS AND VOLATILE FLUID LINES	74
4.3.2.	CONFLICTS	74
4.3.3.	POTHoles	74
4.3.4.	OPEN CUTS	74
4.3.4.1.	BACKFILL MATERIAL	74
4.3.4.2.	PLACEMENT OF BACKFILL	75
4.3.4.3.	COMPACTION OF BACKFILL	76
4.3.4.4.	ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	76
4.3.4.5.	PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	77
4.3.5.	DEPTH OF COVER	77
4.3.5.1.	High Pressures Gas or Volatile Fluids (60 psi and up):	77
4.3.5.2.	Low Pressure Gas or Volatile Fluids (under 60 psi):	77
4.3.6.	FLOATING SLABS (PROTECTIVE SLABS)	77
4.3.6.1.	REINFORCED CONCRETE SLAB	77
4.3.6.2.	OWNERS OPTION	77
4.3.7.	GAS METERS	78
4.3.8.	CROSSINGS	78
4.3.9.	STORM DRAINS	78
4.3.10.	STRUCTURES	78
4.3.10.1.	SPECIAL CASES	78
4.3.10.2.	SAFETY AND COST	78
4.3.11.	JACKING OR BORING	79
4.3.11.1.	WATER BORING	79
4.3.11.2.	BENTONITE SLURRY BORING	79
4.3.11.3.	JACKING OUTSIDE 30 FEET	79
4.3.11.4.	JACKING INSIDE 30 FEET	79
4.3.11.5.	OVERBREAKAGE	80
4.3.12.	LONGITUDINAL ENCROACHMENTS	80
4.3.13.	TUNNELS	80
4.4.	TELEPHONE LINES AND TV CABLES/FIBER OPTICS IN UNCONTROLLED ACCESS HIGHWAYS	81
4.4.1.	CONFLICTS	81
4.4.2.	POTHoles	81
4.4.3.	OPEN CUTS	81
4.4.3.1.	BACKFILL MATERIAL	81
4.4.3.2.	PLACEMENT OF BACKFILL	82
4.4.3.3.	COMPACTION OF BACKFILL	83
4.4.3.4.	ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	83
4.4.3.5.	PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	83
4.4.4.	DEPTH OF COVER	84
4.4.5.	UNDERGROUND CABLE	84
4.4.6.	MANHOLES AND VAULTS	84
4.4.7.	URBAN AREAS	84
4.4.8.	CROSSINGS	84
4.4.9.	JACKING OR BORING	84
4.4.9.1.	CONDUIT	84
4.4.9.2.	WATER BORING	84
4.4.9.3.	BENTONITE SLURRY BORING	85
4.4.9.4.	JACKING OUTSIDE 30 FEET	85
4.4.9.5.	JACKING INSIDE 30 FEET	85

4.4.9.6. OVERBREAKAGE	85
4.4.10. STRUCTURES	86
4.4.11. LONGITUDINAL ENCROACHMENTS	86
4.5. IRRIGATION IN UNCONTROLLED ACCESS HIGHWAYS	87
4.5.1. CONFLICTS	87
4.5.2. POTHOLES	87
4.5.3. OPEN CUTS	87
4.5.3.1. BACKFILL MATERIAL	87
4.5.3.2. PLACEMENT OF BACKFILL	88
4.5.3.3. COMPACTION OF BACKFILL	89
4.5.3.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT	89
4.5.3.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT	89
4.5.4. DEPTH OF COVER	90
4.5.5. OPEN DITCH IRRIGATION	90
4.5.6. PIPED IRRIGATION	90
4.5.7. JACKING OR BORING	90
4.5.7.1. WATER BORING	90
4.5.7.2. BENTONITE SLURRY BORING	90
4.5.7.3. JACKING OUTSIDE 30 FEET	90
4.5.7.4. JACKING INSIDE 30 FEET	91
4.5.7.5. OVERBREAKAGE	91
4.5.8. LONGITUDINAL IRRIGATION ENCROACHMENTS	91
5. UTILITY ABANDONMENT IN CONTROLLED AND UNCONTROLLED ACCESS HIGHWAYS	93
5.1. GENERAL	93
5.1.1. ABANDONMENT OF UTILITY FACILITIES	93
5.1.2. MAINTENANCE OF ABANDONED UTILITY FACILITIES	93
5.1.3. OWNERSHIP	93
5.1.4. LEGAL RESPONSIBILITY	93
5.1.5. STATE LIABILITY	93
5.1.6. COORDINATE FOR DESIGNING INSTALLATIONS	93
5.2. ABANDONED UTILITIES	94
5.2.1. PERMITTED ABANDONMENT	94
5.2.2. NOTICE TO ABANDON UTILITY FACILITIES	94
5.2.3. AS-BUILT RECORDS	94
5.2.4. REMOVAL OF ALL ABOVE-GROUND APPURTENANCES	94
5.2.5. PURGING AND CAPPING	94
5.2.6. ABANDON COSTS	95
5.3. ABANDONED UTILITY FACILITIES	95
5.3.1. COORDINATE ACTIVITIES WITH ADOT	95
5.3.2. INCLUDE WORK IN ADOT'S CONSTRUCTION CONTRACT-	95
5.3.3. UTILITY WITHOUT PRIOR RIGHTS TO REIMBURSE ADOT	95

1. GUIDELINE ON THE ACCOMMODATIONS OF UTILITIES WITHIN STATE OF ARIZONA HIGHWAYS RIGHT-OF-WAY

1.1. INTRODUCTION

1.1.1. BACKGROUND

Highway users have made a very substantial investment in the construction and maintenance of this nation's highways for the public good of all. The high level of service and degree of safety provided by our highway system must be preserved. It is the responsibility of the Arizona Department of Transportation (ADOT) to maintain the optimum degree of safety and traffic carrying capacity of all State and Federal highways under its control.

1.1.2. UTILITY ACCOMMODATION

Utilities are afforded the opportunity to apply for permission to occupy highway right-of-way through the permit or lease process, as appropriate. Each request for permit or lease will be reviewed in detail based on the criteria contained herein. Generally, if the request for permit or lease is in accordance with this guideline, it will be given favorable consideration. For permits, if at anytime hereafter the right of way, or any portion thereof, occupied by the Licensee may be needed or required by the Licensor, any permit or license granted in pursuance of this application may be revoked by the Licensor and all rights thereunder terminated, and upon sufficient notice, the Licensee shall and will remove property belonging to said Licensee.

1.1.3. PRIOR RIGHTS

This manual is not intended to delineate whether or not prior rights exist. A utility which has prior rights will be accommodated via an Agreement. If no prior rights exist, the utility owner will relocate the utility facility at its own expense when the corridor is needed for highway purposes by ADOT. This guideline shall govern the manner and the location of the accommodation of utilities within the highway right-of-way, but some provisions contained herein may not be applicable in prior rights situations.

1.2. AUTHORITY OF THE DIRECTOR

All uses of State highway right-of-way are under the control of the Director of ADOT pursuant to A.R.S. 28-363, and Administrative Rule R17-3-502 (Title 17, Chapter 3).

1.3. STATEMENT OF GUIDELINE

1.3.1. UTILITIES TO WHICH GUIDELINE APPLIES

The principles set forth in this guideline apply to all public and private utilities including but not limited to communication, electricity, water, gas, petroleum products, steam, wastewater, cable TV, irrigation, and similar facilities. Such utilities may involve underground, surface or overhead facilities, either singularly or in combination.

1.3.2. HIGHWAY UTILITIES

This guideline shall apply to all utilities located within State highway rights-of-way except utility lines required for highway operations.

1.3.3. PROTECTION OF THE HIGHWAY

Utility installations and adjustments are to be made with primary consideration to the safety of highway users and the integrity of the highway and giving consideration to utility costs.

1.4. NEW UTILITY INSTALLATION ALONG HIGHWAYS

1.4.1. UNCONTROLLED ACCESS HIGHWAYS AND OUTSIDE OF CONTROL OF ACCESS ON CONTROLLED ACCESS HIGHWAYS

New utilities may be installed longitudinally within the rights-of-way outside the control of access lines of state highways provided the following conditions are met:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with, or impair the planned future expansion of the highway;
- C.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E.** The preferred location of any utility is outside the roadway pavement, but if it is necessary to locate a utility under the pavement, any lane disturbed will be replaced full width.

- F. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.

1.4.2. INSIDE CONTROL OF ACCESS

New utilities will not be permitted to be installed longitudinally within the control of access lines of any highway, except in ADOT established utility corridors. In special cases, installations of utilities may be permitted under strictly controlled conditions. In such a case, the utility must show that:

- A. The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B. The accommodation will not interfere with or impair the planned future expansion of the highway;
- C. Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT right-of-way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- F. The utility facilities will not be constructed and/or maintained by direct access from any traffic lane or connecting ramp within the controlled access;
- G. Individual service connections, valves, manholes, switches or other items requiring access will not be allowed inside the control of access except in established utility corridors.

1.5. EXISTING UTILITIES ALONG PROPOSED CONTROLLED ACCESS HIGHWAYS

1.5.1. EXISTING UTILITIES ON NEW CONTROLLED ACCESS HIGHWAYS

Where a utility exists within the proposed right-of-way of a controlled-access highway and it can be serviced, maintained and operated without access from the controlled access traffic roadways or ramps; it may remain, provided it does not adversely affect the safety, design, construction, operation, maintenance or stability of the highway. Otherwise, it shall be relocated pursuant to the provisions stated herein.

1.5.2. EXISTING UTILITIES ON NEW CONTROLLED ACCESS HIGHWAYS WITH FRONTAGE ROADS

Where a controlled access highway with frontage roads is to be constructed which displaces an existing roadway, existing longitudinal utilities may be relocated between the frontage roads and the right-of-way line. Access to maintain and operate these utilities will not be permitted from the controlled access traffic lanes and ramps.

1.5.3. LIMITED RIGHT-OF-WAY

Under circumstances where rights-of-way widths are severely constricted due to development, natural features, cultural resources or other sensitive environmental concerns, utility relocations will be considered beneath frontage road pavements and may be permitted under strictly controlled conditions. Justifications will be required, showing evidence of financial or other hardship if utility is not allowed to remain, and must be accompanied by maintenance access plan, complete with planned traffic control measures.

1.5.4. UTILITY LOCATION

In all cases, longitudinal facilities will be located as near highway right-of-way line as possible.

1.5.5. PREFERRED UTILITY LOCATION

The preferred location of longitudinal utilities within highway right-of-way will be between highway open channel drainage facility and right-of-way fence.

1.6. UTILITY CORRIDORS

New or relocated utilities will be considered in ADOT established longitudinal corridors where sufficient right-of-way exists. Preferred locations of utility corridors will be where drainage channels, retaining walls, fences, or other such physical features delineate acceptable corridors for such purposes.

1.7. UTILITIES THROUGH OR AFFIXED TO EXISTING BRIDGES

1.7.1. EXISTING UTILITY ON EXISTING BRIDGE

Any utility carried on or through an existing bridge at the time the highway route is improved may continue to be so carried provided the following conditions are met:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned future expansion of the highway;

- C. Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.

1.7.2. NEW UTILITY ON EXISTING BRIDGE

A new utility will not be permitted to be installed on, within or through an existing bridge after the time the highway route is improved, except in existing ducts or for special cases as covered in Section 1.4.

1.8. UTILITIES THROUGH OR AFFIXED TO NEW BRIDGES

1.8.1. UTILITIES ON NEW BRIDGES

Utilities will be considered through or affixed to new ADOT bridges, provided the utility pays all additional design, construction and maintenance costs. Such utilities will not be permitted to be attached to the railing, curb, exterior portions of the bridges outward from the exterior girders or below the bottom of the girders.

1.8.1.1. FLEXIBLE LINES

Utility facilities shall be placed in ducts which do not adversely affect the structural integrity of the bridge or terminate or have access in the roadway pavement.

1.8.1.2. RIGID LINES

Generally, no rigid utility lines will be permitted to be attached to bridge structures. This guideline applies to any grade separation, traffic interchange, ramp, viaduct or stream crossing structure. ADOT may allow exceptions on a case-by-case basis where it can be demonstrated that there are no reasonable and prudent alternatives to the attachment of the rigid utility line on a structure. These special cases will generally be limited to major river crossings, within long sections of depressed freeways, or on projects involving bridge rehabilitation or replacement where there is an existing rigid utility attachment.

When gas or flammable liquid lines are approved for attachment to a bridge, special provisions for safety will be required, and the utility will be responsible for the additional costs.

1.9. UTILITIES CROSSING HIGHWAYS

1.9.1. NEW UTILITY CROSSINGS

New utility installations and adjustments or relocations of existing utilities may be allowed to cross a highway, generally perpendicular and under the highway alignment where practical.

1.9.1.1. MAINTENANCE OUTSIDE CONTROL OF ACCESS

Where a utility follows a crossroad or street which is carried over or under a highway, provision shall be made for the utility to cross the highway on the locations of the crossroad or street in such manner that the utility shall only be maintained from outside the control of access. Generally, the utilities are to be located within the right-of-way of the crossroad or street.

1.9.1.2. OVERHEAD UTILITY CROSSING VERTICAL CLEARANCE

The vertical clearance to overhead utility lines crossing highways shall be determined by *the National Electrical Safety Code, ANSI C2, Institute of Electrical and Electronics Engineers, Inc., and "Arizona Encroachments in Highway Rights-of-Way, Rule No. R17-3-502"* (Title 17, Chapter 3).

1.9.1.3. OVERHEAD UTILITY CROSSINGS IN INTERCHANGE AREAS

When practical, utility support facilities shall be placed outside the controlled access. Where not practical, facilities will be accommodated inside the controlled access only when all of the following conditions are met:

- A.** *A clear zone will be provided with respect to the freeway lanes and ramps in accordance with AASHTO "Roadside Design Guide;"*
- B.** Design sight distance is not impaired;
- C.** The conditions of Section *1.11.1* "Access for Maintaining Utilities," are satisfied.

1.9.1.4. OVERHEAD UTILITY CROSSINGS OUTSIDE OF INTERCHANGE AREAS

Utility lines crossing a highway at points removed from grade separation structures, or those crossing near a grade separation but not within the right-of-way of a crossroad or street, shall be placed so that supporting structures are located outside the control of access line.

1.9.1.5. UNDERGROUND UTILITY CROSSINGS

Access for maintenance will not be allowed from within the control of access lines on controlled access highways.

On uncontrolled access roadways, manholes, valves, and other points of access to utility facilities preferably will be located outside the roadway prism.

1.9.1.6. IRRIGATION DITCHES AND WATER CANALS

Canals and irrigation ditches will be permitted transversely, but longitudinal installations will only be permitted in special cases and as covered by Section 1.4.

Crossings may be made by inverted siphon, or by irrigation culverts or bridges as appropriate to the size of canal, topographic conditions, and highway safety aspects.

1.9.1.7. PROVISIONS FOR EXPANSION OF UTILITIES

When existing utilities are relocated or adjusted in conjunction with construction of a highway, provision may be made for expansion of the utility facilities. They shall be planned to avoid interference with current and planned future traffic.

1.9.1.8. UTILITY CROSSING STRUCTURES

Where crossroads at freeways or highways are so congested with existing and planned utilities as to compromise highway construction, schedules, costs and traffic phasing, ADOT, with the concurrence of the affected utilities, may construct crossings at approximately quarter or half mile locations to accommodate the utility crossings and remove conflicts from the crossroad area. Such crossings may be funded jointly by the utilities or leased from ADOT under the guidelines in Section 1.14.

1.9.1.9. UTILITIES IN DRAINAGE STRUCTURES

Utilities will not be allowed inside of drainage structures except in emergency cases, and must be removed as soon as permanent facilities can be constructed.

1.10. UTILITIES IN VEHICULAR TUNNELS

New utilities will not be permitted to occupy vehicular tunnels on highways, except in special cases and as covered by Section 1.4. Utility facilities which transport flammable

or hazardous materials shall not be allowed in a vehicular tunnel under any circumstance.

1.11. PERMIT FOR UTILITY MAINTENANCE

A permit is required for all utility maintenance within highway right-of-way.

1.11.1. ACCESS FOR MAINTAINING UTILITIES ON CONTROLLED ACCESS HIGHWAYS

Access for maintaining a utility along or across a controlled access highway should be limited to access via:

- A.** Frontage roads where provided,
- B.** Nearby, adjacent or cross public roads and streets,
- C.** Maintenance roads along or near the highway right-of-way lines, connecting only to an intersecting road or adjacent property, or
- D.** Turnouts constructed to limited access roadways for utility access through the ADOT permit procedures.

1.11.2. CONTROLLING UTILITY ACCESS

Means for controlling utility access will include but not be limited to fences, walls, landscaping and drainage channels. Violations of these strict access requirements may result in revocation of the permit and removal of the utility at the utility owner's expense.

1.11.3. EMERGENCY MAINTENANCE

The utility shall make prior arrangements with the ADOT District Office for emergency maintenance procedures.

1.12. CONSTRUCTION AND LOCATION DETAILS

1.12.1. PLANS REVIEW

ADOT shall review and approve the location of all utility installations and adjustments within the highway right-of-way and issue permits for the approved work.

1.12.2. TRAFFIC CONTROL

When utilities are performing construction or maintenance of facilities within ADOT Right-of-Way, the utility must obtain a permit and shall comply with MUTCD for traffic control.

1.12.3. INTERFERENCE WITH ADOT CONTRACTOR

After ADOT notifies the utility of a conflict, the utility may be subject to a back charge for any contractor delays and relocation costs incurred by ADOT if the utility did not meet its commitment schedule for relocation. This reimbursement is subject to the appeal process in Section 1.15.

1.13. UTILITY PERMIT REQUIREMENTS

All utilities who obtain permits to occupy ADOT Highway Rights-of-Way will be subject to the "Arizona Encroachments in Highway Rights of Way, Rule No. R-17-3-502" (Title 17, Chapter 3) and the following additional provisions:

1.13.1. INSTALLATION DRAWINGS and INSTALLATION DRAWING BOND

The utility shall provide drawings reflecting the horizontal location and vertical elevation, as of the time of installation of its facilities, within 90 days of the completion of the work. Such drawings are not intended as a substitute for marking the location of the facilities as required under A.R.S. § 40-360.21, et seq. ADOT reserves the right to require a bond for new permits after written notice to a Permittee of non-compliance with the timely submission of acceptable installation drawings. The amount of the bond shall be based on the estimated cost of verifying the location of a utility's facilities. The utility may be required to provide a bond upon a demonstrated history of non-compliance with the installation drawing requirements and a failure to correct such non-compliance within a reasonable time after written notice from ADOT. The bond will be refunded upon compliance with the installation drawing requirements. Failure to comply may result in forfeiture of the bond required for the permit.

1.13.2. LIABILITY

Neither the State nor any of its departments, officers, or employees shall be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.

1.13.3. INSURANCE

The utility shall provide insurance in accordance with ADOT insurance requirements in the amount of \$1,000,000 per occurrence for as long as the encroachment is within ADOT Right-of-Way, with the State and ADOT as additional named insured, or shall provide documentation of self-insurance providing the State with protection against any and all claims arising through association with said utility occupying public right-of-way for the same period. The coverage needs to provide for bodily injury, property damage to others as a result of accidents from premises or operations of the permittee,

products/completed operations, contractual, broad form property damage and personal injury. The permit will have a hold harmless clause.

1.14. LEASE OF ADOT RIGHTS-OF-WAY OF CONTROLLED ACCESS HIGHWAYS

1.14.1. LEASE ON CONTROLLED ACCESS HIGHWAYS

On controlled access highway rights-of-way, longitudinal utility installations may be located in a utility corridor leased to them pursuant to authority granted by Arizona law.

1.14.2. LONGITUDINAL CORRIDOR OR TRANSVERSE STRUCTURE FOR LEASE

Such leases shall be limited to longitudinal utility corridors as established by ADOT or transverse facilities if ADOT constructs facilities for the exclusive use of the utilities. Sub-leasing of ADOT Highway Right-of-Way will not be allowed without ADOT approval.

1.15. SPECIAL CASES AND APPEALS

1.15.1. APPEALS

Upon disapproval of any request that may result in unique, extraordinary hardship or disagreement an appeal will be allowed, providing the utility submits in writing the reasons why an exemption should be granted.

1.15.2. APPEAL PROCESS

Appeals, except permit appeals, shall be in writing to ADOT Utility and Railroad Engineering Section requesting a review by the Assistant State Engineer for Engineering Technical Group. Permit appeals shall be submitted to the appropriate District Engineer for review.

1.15.3. FINAL APPEAL

In the event the utility is not satisfied with the decision of the appeal, it may submit a written request through the original appeal channels for a review by the State Engineer or review panel. The State Engineer's decision is final.

2. GENERAL INFORMATION

2.1. DEFINITION OF TERMS

- 2.1.1. "AASHTO" - American Association of State Highway and Transportation Officials.
- 2.1.2. "AC" - Asphaltic Concrete, asphalt pavement.
- 2.1.3. "ADOT" - Arizona Department of Transportation.
- 2.1.4. "Bridge Engineer" - ADOT's Engineer in charge of ADOT's Structure Section.
- 2.1.5. "Clear Zone" - A specific distance from the edge of a travel lane free of above ground obstacles as determined by ADOT and the AASHTO "Roadside Design Guide.
- 2.1.6. "Controlled Access Highway" - Means a highway with access controlled by the public authority having jurisdiction over the highway, street or roadway.- Example: Interstate highway, urban freeway, expressway, parkway
- 2.1.7. "Controlled Access Line" - The line on ADOT plans which denotes the access boundary on a controlled access highway. The line is usually coincident with the right-of-way line.
- 2.1.8. "Control of Access" - Locations where owners or occupants of abutting lands and other persons have no legal right of access.
- 2.1.9. "Depth of Cover" - The minimum depth at which utility facilities may be installed at time of installation. In paved areas, depth is measured between sub grade and the top of utility facilities. In unpaved areas, depth is measured between finish grade and the top of utility facilities.
- 2.1.10. "Engineer" - The State Engineer, acting by and under the authority of the laws of the State of Arizona, or the State Engineer's representative in matters relating to construction activities.
- 2.1.11. "Established Utility Corridor" - A longitudinal strip of right-of-way designated by ADOT for utility facility placement.
- 2.1.12. "Freeway" - A controlled access highway with access limited to ramps, and all traffic crossings are by grade separations.
- 2.1.13. "Frontage Road" - A local street or road auxiliary to and located on the side of a highway for service to abutting property and adjacent areas and for control of access to the main roadway.

- 2.1.14. “Hazardous Material”** - Materials or substances defined as “hazardous substances”, “hazardous material”, or “toxic substances”, as defined in any applicable state or federal law.
- 2.1.15. “Highway”** - A general term denoting public way for the principal purposes of vehicular traffic.
- 2.1.16. “Highway Right-of-Way”** - As used herein, general term denoting land, property, or interest therein, usually in a strip, acquired for highway purposes.
- 2.1.17. “Interchange”** - An intersection of at least two roads which are separated by grade and have ramps to move from one road to the other.
- 2.1.18. “Installation Drawings”** - A drawing showing the horizontal location and vertical elevation of installed facilities as of the day constructed referenced to ADOT control points.
- 2.1.19. “Lane Width”** - Paved section of the roadway from pavement centerline or lane line stripe to pavement lane line, edge line stripe or without edge line stripe to curb or edge of pavement.
- 2.1.20. “MUTCD”** - Manual on Uniform Traffic Control Devices.
- 2.1.21. “Uncontrolled Access Highway”** - Means a highway to which owners or occupants of abutting lands and other persons have legal right of access.- Example: Non-freeway State primary and secondary highways.
- 2.1.22. “Open Cut”** - Any excavation in the right-of-way larger than 300 mm x 300 mm.
- 2.1.23. “PCCP”** - Portland Cement Concrete Pavement, white pavement.
- 2.1.24. “Permit”** - An ADOT issued document specifying the conditions under which an entity’s facilities may utilize a portion of ADOT right-of-way. Any references to “permit” shall include encroachment permit and/or utility permit.
- 2.1.25. “Pothole”** - A hole cut in the surface within the right-of-way with a maximum size of 300mm x 300mm to access underground utility facilities.
- 2.1.26. “Ramp”** - A roadway providing access to or from a controlled access highway. When a ramp and frontage road merge the resulting roadway is also defined as a ramp.
- 2.1.27. “Roadway Prism”** - That portion of the right-of-way required for the highway, limited by the outside edges of slopes, including ditches, and all appurtenant structures.
- 2.1.28. “State”** - State of Arizona.

2.1.29. “Utility” - An entity which transmits or distributes communications, cable television, electricity, light, heat, gas, oil, crude products, water, sewer, waste or any other similar commodity which directly or indirectly serves the public.

2.2. AUTHORITY

2.2.1. DIRECTOR’S AUTHORITY

A.R.S. 28-363 and A.R.S. 28-7045 gives the Director of the Department of Transportation complete and exclusive operational control and jurisdiction over the use of State highways and routes, and to prescribe such rules and regulations regarding such use as he deems necessary.

2.2.2. ENCROACHMENT

A.R.S. 28-7053 and A.R.S. 28-7054 covers right-of-way encroachments and penalties. A.R.S. 28-7055 covers right-of-way fence controls.

2.2.3. PERMIT AUTHORITY

Administrative Rule R17-3-502 (Title 17, Chapter 3) covers permits for encroachments in highway rights-of-way.

2.3. CONDITIONS FOR UTILITY PERMITS WITHIN THE HIGHWAY RIGHT-OF-WAY

2.3.1. PERMIT REQUIRED

All utility encroachments within the highway right-of-way require a valid permit from ADOT. All permits shall be revocable as specified on the permit form.

2.3.2. NON-TRANSFERABILITY OF PERMIT

No party other than the named permittee (utility) or contractor of the permittee (utility) are authorized to work under this permit.

2.3.3. ACCEPTANCE OF PROVISIONS

Any work performed pursuant to an ADOT permit shall constitute an acceptance of the terms and conditions specified on the permit.

2.3.4. PRECEDENT

Permits are issued with the understanding that any particular action taken is not to be considered as establishing a precedent for future requests.

2.3.5. NOTICE PRIOR TO STARTING WORK

Before starting work on which either full or partial inspection is required by the terms of the permit, the permittee shall notify the ADOT District Engineer or other designated employee three (3) days excluding Saturdays, Sundays and legal holidays in advance of the date work is to begin.

2.3.6. POSTING PERMIT

The permit or a copy thereof, shall be kept at the site of the work, and must be shown to any representative of the ADOT or any enforcement officer on demand.

2.3.7. PROTECTION OF TRAFFIC

Adequate provisions shall be made for the protection of the traveling public before any work can start. All warning signs, lights, barricades and other safety devices and other measures required for the public safety, shall conform to and follow the requirements of the current "Manual on Uniform Traffic Control Devices" and the current "Arizona Department of Transportation Traffic Control Supplement."

2.3.8. STORAGE OF MATERIAL AND EQUIPMENT

Except as specified herein, no construction material shall be stored, nor equipment parked during non-work periods, within the highway controlled access during the performance of the permittee's work on completed sections of freeways. On incomplete sections of freeways and uncontrolled access highways, material and equipment may be stored and parked under controlled conditions.

2.3.9. RIGHT OF WAY

A utility (permittee) shall, upon completion of the work, remove all excess construction material and debris, repair any damage to ADOT property such as fences, structures or pipes, and restore landscaping to its original condition.

2.3.10. ACCESS

Temporary or permanent access gates may be installed in right-of-way fences on uncontrolled access roads if provided for in the permit. New access gates will not be permitted on an existing freeway. Existing gates are permitted but must be locked at all times. Any rights of access are not transferable or assignable by the utility.

2.3.11. CONSTRUCTION

All work performed within highway rights of way shall conform to recognized standards of utility construction and "Arizona Department of Transportation Standard Specifications for Road and Bridge Construction", and all conditions on the permit.

2.3.12. ROUTINE MAINTENANCE

A permit is required before a utility company performs routine maintenance within highway right-of-way. Blanket permits may be granted for minor maintenance work on uncontrolled access highways only, and for street light maintenance on controlled access highways.

2.3.13. EMERGENCY CONDITIONS

The utility shall make prior arrangements with the ADOT District Office for emergency maintenance procedures. The utility shall notify the Department of Public Safety (DPS) and the ADOT District Engineer or his representative immediately or as soon as possible. The utility shall perform all necessary repairs to restore facilities and take all necessary action to protect the traveling public during the performance of their work under emergency conditions. All acts committed by the utility or its representatives under these conditions shall be the sole responsibility of the utility and subject to conditions of its prior arrangements or follow-up permit.

2.3.14. LIABILITY

State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.

2.3.15. ADOT PLANS REVIEW

ADOT will review the proposed location and design of all utility installations and adjustments located within highway right-of-way for their compatibility with planned and present use of the highway.

2.3.16. REQUEST FOR PERMITS

Request for permits shall include the following items before a request will be processed:

- A. Highway right-of-way lines;
- B. Highway controlled access lines;
- C. Highway center line;
- D. Ties from new facilities to Highway center line, stationing and mileposts;
- E. Minimum clearance above finished roadway surface or structures for proposed aerial lines;

- F. Type, size, number and voltage of conductors;
- G. The size, class, grade and wall thickness of conduit, amount of cover as described in Section 2.1.9 type of backfill material, voltage and operating pressure if applicable, of underground lines;
- H. The size of cables and number of pairs for communication lines;
- I. Plan and profile drawings for all conduit systems crossing controlled access
- J. Any change to the design, location or construction of an approved permit's plans will require ADOT approval prior to the change taking place.

2.3.17. INSTALLATION DRAWING

The utility shall provide drawings reflecting the horizontal location and vertical elevation, as of the time of installation of its facilities, within ninety (90) days of the completion of the work. Such drawings are not intended as a substitute for marking the location of the facilities as required under A.R.S. § 40-360.21,

2.3.18. INSTALLATION DRAWING BOND

ADOT reserves the right to require a bond for new permits after written notice to a Permittee of non-compliance with Section 2.3.17. The amount of the bond shall be based on the estimated cost of verifying the location of a utility's facilities. The utility may be required to provide a bond upon a demonstrated history of non-compliance with Section 2.3.17 and a failure to correct such non-compliance within a reasonable time after written notice from ADOT.

The bond will be refunded upon compliance with Section 2.3.17. Failure to comply may result in forfeiture of the bond required for the permit.

2.3.19. NON-COMPLIANCE

Failure to comply with the terms and conditions, as specified herein or on the permit may be cause for revocation of permit.

2.4. ADEQUATE SPACE IN RIGHT-OF-WAY FOR UTILITY ACCOMMODATIONS

When adequate space is limited within the highway right-of-way to safely accommodate several utilities, the following guideline will be used:

- A. During design process of a new roadway or roadway improvements, utility accommodations may be designed along with the project with concurrence and involvement of the affected utilities;
- B. After construction of the highway or highway improvement utility installations will be allowed on "first come, first considered" guideline. Consideration will be given to the compatibility of the affected utilities.

3. UTILITY GUIDELINES IN CONTROLLED ACCESS HIGHWAY

3.1. ELECTRICAL LINES

3.1.1. CONFLICTS

The State assumes no liability for conflicts with existing underground or overhead utilities. It is further understood the utility will, at its expense (except when the utility has prior rights), remove, relocate, or alter its facilities within the right-of-way when required by ADOT.

3.1.2. EXISTING ELECTRIC LINE ALONG PROPOSED CONTROLLED ACCESS HIGHWAYS

Where an electric line already exists within the proposed right-of-way of a controlled-access highway and it can be serviced, maintained and operated without access from the controlled access traffic roadways or ramps, it may remain provided it does not adversely affect the safety, design, construction, operation, maintenance or stability of the highway. Otherwise, it must be relocated.

3.1.3. POTHoles

Potholes will not be allowed on any completed section of the highway or ramp paved area. Potholes in unpaved areas and on frontage roads will be allowed. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requirements of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

3.1.4. OPEN CUTS

Open cuts will not be permitted on any completed section of the highway or ramps. Open cuts may be permitted where the roadway surfacing has not been completed. Open cuts in unpaved areas may be permitted outside the control of access. Open cuts on frontage or cross roads require pavement replacement with the same type material as the existing roadway.

3.1.4.1. BACKFILL MATERIAL

All installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism areas shall be backfilled as per the pothole requirements in Section 3.1.3.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100
¾ inches	60-100
No. 8	35-80
No. 200	0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90.

The required test results will be provided by the utility to ADOT.

3.1.4.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than 3 inches shall be removed from the excavation before backfill is placed.

Where a utility structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8") inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4') feet in depth. The maximum water content of the slurry mixture shall be 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

3.1.4.3. COMPACTION OF BACKFILL

In pavement areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

3.1.4.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

Asphaltic Concrete Pavement minimum replacement will be 100 feet along the center line of the highway, 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

The Asphaltic Concrete material will be hot material conforming to Section 409 of the current "*State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction*", except for the payment provision.

3.1.4.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot each side. The surface texture and grade will match the existing pavement surface. Any existing PCCP slab disturbed will be replaced in full.

Portland Cement Concrete Pavement will conform to Section 401, of the current "*State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction*", except for payment provision.

3.1.5. DEPTH OF COVER

Direct burial cable shall have a minimum cover of (48") forty-eight inches. Underground electric lines located within conduit or ducts shall have a minimum cover of (36") thirty-six inches.

3.1.6. CONTROL OF ACCESS

Utility structures, manholes, guys or other appurtenances will not be permitted within the control of access area, except in ADOT Established Utility Corridors.

3.1.7. MANHOLES

No manholes will be allowed inside the control of access except in Department established utility corridors. No manholes will be allowed outside the control of access in the pavement surface.

3.1.8. CROSSINGS

Transmission and distribution electric lines may be permitted to cross over or under all controlled access highways, where the utility can be serviced without access from inside the control of access. The electric lines should cross the highway generally perpendicular to the highway alignment where practical.

3.1.8.1. ELECTRIC LINES ALONG CROSSROADS

Where an electric line follows a crossroad or street which is carried over or under a controlled access highway, provision should be made for the electric line to cross the highway at the location of the crossroad or street in such manner that the electric line can be serviced without access from inside the control of access. Generally, electric lines should be located within the crossroad or street right-of-way. Where distinct advantage and appreciable cost savings can be affected by locating electric lines outside the crossroad or street right-of-way, they may be so located providing safety and controlled access requirements are met.

3.1.8.2. OVERHEAD ELECTRIC LINE CROSSINGS

The vertical clearance to overhead electric lines crossing highways shall be determined by the National Electrical Safety Code, ANSI C2, Institute of Electrical and Electronics Engineers, Inc., and "Arizona Encroachments in Highway Rights of Way, Rule No. R-17-3-502" (Title 17, Chapter 3).

A. Interchange Areas: When practical, electric poles shall be placed outside the control of access. Where not practical, electric poles may be accommodated inside the control of access only when all of the following conditions are met:

- i. A clear zone will be provided with respect to the highway lanes and ramps as determined by ADOT;
- ii. The design sight distance is not impaired;
- iii. Access for servicing a utility along or across a controlled access highway should be limited to access via:
 - a. Frontage roads where provided;
 - b. Nearby, adjacent or cross public roads and streets;
 - c. Maintenance roads along or near the highway right-of-way lines, connecting only to an intersecting road or adjacent property, or;
 - d. Turnouts constructed to limited access roadways for utility access through the ADOT permit procedures.

B. Outside of Interchange Areas: Electric lines crossing a highway at points removed from grade separation structures, or those crossing near a grade separation but not within the right-of-way of a crossroad or street, shall be adjusted so that supporting structures are located outside the control of access line.

3.1.8.3. UNDERGROUND ELECTRIC LINE CROSSINGS

Underground electric line crossings are preferred but must have all service or maintenance from outside the control of access lines.

3.1.8.4. ELECTRIC CABINETS & TRANSFORMERS

Electric cabinets, transformers and other ground mounted appurtenances shall be located outside the control of access lines.

3.1.9. ELECTRIC LINES THROUGH OR AFFIXED TO EXISTING BRIDGES

Any electrical conduit or duct carried on or through an existing bridge at the time the highway route is improved may continue to be so carried provided the following conditions are met:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned future expansion of the highway;
- C.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;

- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT right-of-way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.
- F. New utilities will be allowed in existing ducts or conduits but new utility conduit or ducts will not be permitted to be installed on, within or through an existing bridge after the time the highway bridge structure is improved.

3.1.10. ELECTRIC LINES THROUGH OR AFFIXED TO NEW BRIDGES

Electric line crossings will be considered in conduit or ducts through new bridges, provided the utility company pays all additional design, construction and maintenance costs. Such utilities will not be permitted to be attached to any part of the exterior of the bridge.

Electric lines will be limited to conduits or ducts which do not adversely affect the structural integrity of the bridge.

3.1.10.1. BRIDGE ENGINEER

The Bridge Engineer shall determine the location of all lines installed within a structure, and shall design the access openings as required.

3.1.11. JACKING OR BORING

3.1.11.1. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

3.1.11.2. BENTONITE SLURRY BORING

Conduit may be Bentonite clay slurry bored or drilled under the following conditions:

- A. Bentonite slurry must be controlled for the existing soil conditions;
- B. Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C. Drilling fluid shall contain a minimum of 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D. No other drilling fluid will be allowed.

3.1.11.3. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- B.** All work vehicles and equipment will be restricted to the fenced area.

3.1.11.4. JACKING INSIDE 30 FEET

Jacking or boring pits will not be permitted in the median within 30 feet of a traveled lane. Jacking or boring pit may be allowed within 30 feet of the edge of the right shoulder with the following restrictions:

- A.** The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- C.** All work vehicles and equipment will be restricted to the fenced area;
- D.** The jacking or boring pit will be located outside the pavement structure.

3.1.11.5. OVERBREAKAGE

Extreme care must be taken during jacking or boring operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreakage shall be pressure grouted.

3.1.12. LONGITUDINAL ELECTRIC LINES INSIDE THE CONTROL OF ACCESS

New longitudinal electric lines will not be permitted to be installed within the control of access lines in any location other than within ADOT established utility corridors except in special cases. Installations of longitudinal electric lines may be permitted only under strictly controlled conditions. In each of these special cases, the utility owner must show that:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the present use or planned future expansion of the highway;

- C. Any alternative location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- F. Electric lines will not be allowed longitudinally under paved lanes;
- G. The accommodation will not be constructed and/or maintained by direct access from any traffic lane or connecting ramp within the controlled access;
- H. Individual service connections, manholes, switches, transformer, or other items requiring access will not be allowed inside the control of access except in established utility corridors or to service ADOT facilities;
- I. The underground installation does not require extensive permanent removal or alteration of trees, landscaping or other natural features.

3.1.13. LONGITUDINAL ELECTRIC LINES OUTSIDE THE CONTROL OF ACCESS

Electric lines will be allowed to be installed longitudinally within the rights-of-way outside the control of access lines of State highways provided the following conditions are met:

- A. The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B. The accommodation will not interfere with or impair the present use or planned future expansion of the highway;
- C. Any alternative location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation.
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the

ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.

- F. Overhead guys, anchors or stub poles will not be permitted within the clear zone of traffic lane as described in AASHTO "Roadside Design Guide".

3.1.14. PREFERRED LONGITUDINAL LOCATION

The preferred location of longitudinal utilities within highway rights-of-way will be between highway open channel drainage facility and right-of-way fence or as close to the right-of-way line as is practical.

3.1.15. GATES

3.1.15.1. EXISTING GATES

Existing gates may be permitted to remain, except in areas where the utility company has other means of access to their facilities by an access road or frontage road from an interchange. Existing gates must be locked at all times. Any rights of access are not transferable or assignable by the utility. Abuse of this privilege will be just cause for removal of existing gates.

3.1.15.2. NEW GATES

New access gates will not be permitted on existing controlled access highways except where there are no other means of access to the facilities from outside the control of access.

3.2. WATER & SEWER LINES IN CONTROLLED ACCESS HIGHWAY

3.2.1. CONFLICTS

The State assumes no liability for conflicts with existing underground or overhead utilities. It is further understood the permittee will at its expense (except when the utility has prior rights), remove, relocate, or alter its facilities within the right-of-way when required by ADOT

3.2.2. POTHoles

Potholes will not be allowed on any completed section of the highway or ramp paved area. Potholes in unpaved areas and on frontage roads will be allowed. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requirements of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

3.2.3. OPEN CUTS

Open cuts will not be permitted on any completed section of the highway or ramps. Open cuts may be permitted where the roadway surfacing has not been completed. Open cuts in unpaved areas may be permitted outside the control of access. Open cuts on frontage or cross roads require pavement replacement with the same type material as the existing roadway.

3.2.3.1. BACKFILL MATERIAL

All installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism areas shall be backfilled as per the pothole requirements in Section 3.2.2.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100

¾ inches 60–100

No. 8 35-80

No. 200 0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

3.2.3.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than 3 inches shall be removed from the excavation before backfill is placed. Where a utility structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8”) inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4’) feet in depth. The maximum water content of the slurry mixture shall be 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly

mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

3.2.3.3. COMPACTION OF BACKFILL

In pavement areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

3.2.3.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

Asphaltic Concrete Pavement minimum replacement will be 100 feet along the center line of the highway, 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

The Asphaltic Concrete material will be hot material conforming to Section 409, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction", except for the payment provision.

3.2.3.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot each side. The surface texture and grade will match the existing pavement surface. Any existing PCCP slab disturbed will be replaced in full.

Portland Cement Concrete Pavement will conform to Section 401 of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction", except for payment provision.

3.2.4. DEPTH OF COVER

All water or sewer lines located within the controlled access right-of-way shall have minimum of thirty-six (36") inches of cover except as stated in Section 3.2.8.2.

3.2.5. WATER METER & SERVICE LINES

Water meters and service lines serving private facilities will not be permitted within the highway control of access.

3.2.6. FIRE HYDRANTS

Fire hydrants may be installed within controlled access highway rights of way in urban areas, under all of the following conditions:

- A. Where there is no other means of serving the area;
- B. Where a frontage road exists;
- C. Outside the Control of Access.

3.2.7. MANHOLES

Sewer manholes will not be allowed inside the control of access except in Department established utility corridors. Manholes outside the control of access should not be located inside the roadway pavement.

3.2.8. CROSSINGS

3.2.8.1. GUIDELINES

Water mains, water service lines and sewer lines may be permitted to cross under all controlled access highways with the following conditions:

- A. No individual service connections, valves, manholes or other items requiring access will be allowed inside the control of access except in established utility corridors;
- B. May be installed in open cuts during highway construction prior to paving;
- C. Water lines may be installed in a jacked or bored sleeve after highway construction;
- D. Gravity Sewer lines may be installed by direct jacking or boring or in a jacked or bored sleeve after highway construction;
- E. Must be maintained from outside the control of access;
- F. Water lines must have shut off valves at each right-of-way line.

3.2.8.2. WATER LINES CROSSINGS

There are three types of water lines crossing of freeways: (a) freeway is elevated at an "at grade" crossroad, (b) freeway is elevated with no freeway crossroad, and (c) freeway depressed.

- A. FREEWAY IS ELEVATED AT AN “AT GRADE” CROSSROAD** Water lines will be accommodated crossing the freeway as follows: Un-sleeved freeway crossings with pipelines up to 48 inches Ductile Iron Pipe with Restrained Joints (DIPRJ) will be allowed within the crossroad area. The pipelines shall be placed in the parkway back of the sidewalk, under the sidewalk or under the outside (slow) lane of the crossroad with a minimum of 6 feet of cover. When larger pipelines are required, they shall not be jointed or gasketed design and shall be placed in the same location mentioned above at a minimum ten (10) feet of cover. Protection of the bridge structure in the vicinity of drilled shafts and spread footings may be required. Backfill shall be one-sack slurry to the springline and have warning tape placed in the trench above the pipeline.
- B. FREEWAY IS ELEVATED WITH NO FREEWAY CROSSROAD** - All pipelines (including DIPRJ) placed in areas where crossroads do not exist shall be sleeved under the freeway pavement/embankment from Controlled Access line to Controlled Access line (preferred) or roadway prism (minimum) with the sleeve plugged at each end and the sleeve vented to the surface to enable positive leak detection. Access points shall be from outside the Controlled Access. (To facilitate maintenance, the Controlled Access line locations may be adjusted during the design phase of each project.) Placement of the lines in areas remote from the crossroad is preferred.
- C. FREEWAY IS DEPRESSED** - All pipelines (including DIPRJ) placed in the areas where the freeway is depressed shall be sleeved under the freeway roadway prism from Controlled Access line to Controlled Access line (preferred) or roadway prism (minimum) with the sleeve plugged at each end and the sleeve vented to the surface to enable positive leak detection. Access points shall be from outside the Controlled Access lines. (To facilitate maintenance the Controlled Access line locations may be adjusted during the design phase of each project.) Placement of the lines in areas remote from the crossroad is preferred.

3.2.8.3. GRAVITY SEWER LINES CROSSINGS

Gravity Sewer lines may use casings. Whether or not casings are used, no access for maintenance will be allowed within the Controlled Access.

3.2.8.4. FORCED SEWER MAINS CROSSING

Forced sewer mains should be treated as water lines in Section 3.2.8.2.

3.2.9. STORM DRAINS

Water or sewer lines will not be permitted within any drainage structure, except under temporary emergency conditions.

3.2.10. WATER OR SEWER LINES THROUGH OR AFFIXED TO EXISTING BRIDGES

3.2.10.1. GUIDELINES

Any water or sewer line carried on or through an existing bridge at the time the highway route is improved may continue to be so carried provided the following conditions are met:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned future expansion of the highway;
- C.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration,
- D.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E.** State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.
- F.** Water or sewer lines will not be allow inside closed cells of a bridge, but may be accommodated only in open areas of bridges/structures, i.e. between girders or between the bays of box girders if the design of the structures permits.

3.2.10.2. NEW WATER OR SEWER LINE ON EXISTING BRIDGE

A new water or sewer line will not be permitted to be installed on, within or through an existing bridge after the time the highway route is improved, except for special cases.

3.2.10.3. SPECIAL CASES

These special cases will generally be limited to major river crossings, within long sections of depressed highway, or on projects involving bridge rehabilitation or replacement where there is an existing water line attachment.

3.2.11. WATER OR SEWER LINES THROUGH OR AFFIXED TO NEW BRIDGES

3.2.11.1. GENERAL GUIDELINE

It is the general guideline that no water or sewer lines will be permitted to be attached to bridge structures. This guideline applies to any grade separation, traffic interchange, ramp, viaduct or stream crossing structure. However, ADOT will consider exceptions to the general guideline on a case-by-case basis where it can be demonstrated that there are no reasonable and prudent alternatives to the attachment of the rigid utility line on a structure. Water or sewer lines will not be allowed inside closed cells of a bridge, but may be accommodated only in open areas of bridges/structures, i.e. between girders or between the bays of box girders if the design of the structures permits.

3.2.11.2. SPECIAL CASES

These special cases will generally be limited to major river crossings, within long sections of depressed highway, or on projects involving bridge rehabilitation or replacement where there is an existing water or sewer line attachment.

3.2.11.3. PAY ADDITIONAL COSTS

If water or sewer line crossings are considered through or affixed to new bridges, the utility owner must pay all additional design, construction and maintenance costs.

3.2.11.4. DESIGN

The utility owner shall be responsible for the design of utility facilities and to supply the Bridge Engineer with the following information:

- A.** Size and schedule of pipe;
- B.** Size and schedule of casings and sleeves as well as location and method of relief on the casing or sleeve;
- C.** Total combined weight of transmission and carrier pipe, casings, hangers, supports, expansion joints and other related items as well as the water or sewage.

3.2.11.5. POINTS OF ACCESS

Valves, manholes and other points of access will be outside the controlled access limits.

3.2.11.6. CASING ON STRUCTURES

All water or sewer lines installed on or within a structure shall be inserted within a casing and vented outside the bridge, and beyond the approach slab, unless in the opinion of the Bridge Engineer it would not be required.

3.2.11.7. BRIDGE ENGINEER

The ADOT Bridge Engineer shall determine the size and final location of all lines installed within a structure, and shall design the access openings as required.

3.2.11.8. ATTACHMENTS (Bridge)

Water or sewer lines, supports, brackets, or other related items, will not be permitted to be suspended below or attached to the exterior of any new or existing structure.

3.2.12. CASINGS

Under all completed sections of the highway and ramp roads casings shall be jacked or bored. Transverse casings shall be continuous within the control of access. The utility owner will submit the casing size and material to ADOT for approval before completing the design and permit request.

3.2.13. JACKING OR BORING

Casing will be required for jacked or bored roadway crossings.

3.2.13.1. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

3.2.13.2. BENTONITE SLURRY BORING

Bentonite clay slurry boring or drilling will be allowed under the following conditions:

- A.** Bentonite slurry must be controlled for the existing soil conditions;
- B.** Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C.** Drilling fluid shall contain a minimum of .2 pounds per gallon concentration of suspended Bentonite clay;

D. No other drilling fluid will be allowed.

3.2.13.3. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A. The jacking or boring pit area will be fenced to keep the public out of the pit;
- B. All work vehicles and equipment will be restricted to the fenced area.

3.2.13.4. JACKING INSIDE 30 FEET

Jacking or boring pits will not be permitted in the median within 30 feet of a traveled lane. Jacking or boring pit may be allowed within 30 feet of the edge of the right shoulder with the following restrictions:

- A. The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B. The jacking or boring pit area will be fenced to keep the public out of the pit;
- C. All work vehicles and equipment will be restricted to the fenced area;
- D. The jacking or boring pit will be located outside the pavement structure;
- E. Access to bore holes or pits off the right shoulder of the roadway will not be permitted from the traveled portion of the highway;
- F. Access to bore holes or pits in the median will require the aid of a Highway Patrol officer if accessed from the highway.

3.2.13.5. OVERBREAKAGE

Extreme care must be taken during jacking or boring operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreakages shall be pressure grouted.

3.2.14. LONGITUDINAL WATER OR SEWER LINES INSIDE THE CONTROL OF ACCESS

New longitudinal water or sewer lines will not be permitted to be installed within the control of access lines in any location other than within an ADOT established utility corridor, except in special cases installations of longitudinal water or sewer lines may be permitted only under strictly controlled conditions. In each of these cases, the utility owner must show that:

- A. The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B. The accommodation will not interfere with or impair the planned future expansion of the highway;
- C. Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic, and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- F. The accommodation will not be constructed and/or maintained by direct access from any traffic lane or connecting ramp within the controlled access;
- G. Individual service connections, valves, manholes, or other items requiring access will not be allowed inside the control of access except in established utility corridors.

3.2.15. LONGITUDINAL WATER OR SEWER LINES OUTSIDE OF CONTROL OF ACCESS ON CONTROLLED ACCESS HIGHWAY

New water or sewer lines will be allowed to be installed longitudinally within the rights-of-way outside the control of access lines provided the following conditions are met:

- A. The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B. The accommodation will not interfere with or impair the planned future expansion of the highway;
- C. Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property,

including third parties, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;

- F. Individual service connections, valves, manholes or other items requiring access will not be allowed in frontage road pavement surface or inside the control of access except in established utility corridors.

3.2.16. PREFERRED LONGITUDINAL LOCATION

The preferred location of longitudinal utilities within highway rights-of-way will be between highway open channel drainage facility and right-of-way fence or as close to the right-of-way line as is practical.

3.2.17. GATES

3.2.17.1. EXISTING GATES

Existing gates may be permitted to remain, except in areas where the water or sewer owner has other means of access to their facilities by an access road or frontage road from an interchange. Existing gates must be locked at all times. Any rights of access are not transferable or assignable by the utility. Abuse of this privilege will be just cause for removal of existing gates.

3.2.17.2. NEW GATES

New access gates will not be permitted on existing controlled access highways except where there are no other means of access to the facilities from outside the control of access.

3.3. GAS LINES, PRODUCT LINES (VOLATILE FLUIDS) IN CONTROLLED ACCESS HIGHWAY

3.3.1. CODES

All high pressure pipelines shall comply with the safety regulation in U.S. Department of Transportation, Title 49 of Code of Federal Regulation, Chapter 601 and all other applicable Federal, State, county and city codes.

3.3.2. CONFLICTS

The State assumes no liability for conflicts with existing underground or overhead utilities. It is further understood the utility will at its expense (except when the utility has prior rights), remove, relocate, or alter its facilities within the right-of-way when required by ADOT.

3.3.3. POTHoles

Potholes will not be allowed on any completed section of the highway or ramp paved area. Potholes in unpaved areas and on frontage roads will be allowed. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requirements of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

3.3.4. OPEN CUTS

Open cuts will not be permitted on any completed section of the highway or ramps. Open cuts may be permitted where the roadway surfacing has not been completed. Open cuts in unpaved areas may be permitted outside the control of access. Open cuts on frontage or cross roads require pavement replacement with the same type material as the existing roadway.

3.3.4.1. BACKFILL MATERIAL

All pipe installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism shall be backfilled as per the pothole requirements in Section 3.3.3.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay

or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100
¾ inches	60–100
No. 8	35-80
No. 200	0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

3.3.4.2. PLACEMENT OF BACKFILL

All earth material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than three (3”) inches shall be removed from the excavation before backfill is placed.

Where a utility structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8”) inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4") inches in depth. The maximum water content of the slurry mixture shall be 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

3.3.4.3. COMPACTION OF BACKFILL

In paved areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

3.3.4.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

Asphaltic Concrete Pavement minimum replacement will be 100 feet along the center line of the highway, 50 feet either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

The Asphaltic Concrete material will be hot material conforming to Section 409 of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction", except for the payment provision.

3.3.4.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot. Any existing PCCP slab disturbed will be replaced in full. The surface texture and grade will match the existing pavement surface.

Portland Cement Concrete Pavement will conform to Section 401 of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction", except for payment provision.

3.3.5. DEPTH OF COVER

The minimum installation cover as defined in Section 2.1.9 for a gas line or product lines is as follows:

3.3.5.1. High Pressure Gas or Volatile Fluids (60 psi and up):

A. 60 inches;

- B. Reinforced concrete floating slab, two (2') feet wider than the gas line trench, may reduce the required cover to 36 inches;

3.3.5.2. Low Pressure Gas or Volatile Fluids (under 60psi):

- A. 48 inches;
- B. Reinforced concrete floating slab, two (2') feet wider than the gas line trench, may reduce the required cover to 36 inches;

3.3.6. FLOATING SLABS - (PROTECTIVE SLAB)

3.3.6.1. REINFORCED CONCRETE SLAB

A 6 inches thick reinforced concrete slab one (1') foot wider on each side of the pipeline trench may be used on an existing or new pipeline for the protection against traffic, dead loads or highway construction operations and maintenance as a substitute for some of the required cover. The top of the slab will not protrude into the sub grade.

3.3.6.2. OWNER OPTION

The installation of a floating slab shall be at the option of the pipeline owner.

3.3.7. POINTS OF ACCESS

3.3.7.1. VENTS AND DRAINS

Vents and or drains shall be located and constructed so as not to interfere with the highway construction, operation or maintenance. The preferable location is outside the control of access.

3.3.7.2. VALVES AND MANHOLES

Individual service connections, valves, manholes or other items requiring access will not be allowed in frontage road pavement surfaces or inside the control of access except in established utility corridors.

3.3.8. CROSSINGS

Gas lines or Product line will be permitted to cross under the controlled access highway with following the conditions:

- A. No individual service connections will be allowed inside the control of access;
- B. Crossings may be installed by open cuts during highway construction prior to paving;
- C. Crossings may be installed by jacking or boring after highway construction is complete and open to traffic;

- D. Must be maintained from outside the control of access;
- E. Must have shut off valves at each right-of-way line.

3.3.9. STRUCTURES

It is the general guideline that no rigid gas or product lines will be permitted to be attached to bridge structures. However, ADOT will consider exceptions to the general guideline on a case-by-case basis where it can be demonstrated that there are no reasonable and prudent alternatives to the attachment of the rigid gas or product line on a structure. These special cases will generally be limited to major river crossings, within long sections of depressed highways, or on projects involving bridge rehabilitation or replacement where there is an existing rigid gas or product attachment.

Flexible gas and product lines may be placed in sealed sleeves which are vented to the outside of the bridge if it does not adversely affect the structural integrity or safety of the bridge.

When gas or product lines are approved for attachment to a bridge, provision must be made during the design of the structure to provide for casings, sleeves, access openings and other appurtenances and special provisions for safety will be required, and the utility company will be responsible for the additional costs.

Manholes or points of access will not be permitted at the ends of bridges in the roadway pavement.

3.3.10. JACKING OR BORING

3.3.10.1. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

3.3.10.2. BENTONITE SLURRY BORING

Bentonite clay slurry boring or drilling will be allowed under the following conditions:

- A. Bentonite slurry must be controlled for the existing soil conditions;
- B. Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C. Drilling fluid shall contain a minimum of 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D. No other drilling fluid will be allowed.

3.3.10.3. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- B.** All work vehicles and equipment will be restricted to the fenced area.

3.3.10.4. JACKING INSIDE 30 FEET

Jacking or boring pits will not be permitted in the median within 30 feet of a traveled lane. Jacking or boring pit may be allowed within 30 feet of the edge of the right shoulder with the following restrictions:

- A.** The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- C.** All work vehicles and equipment will be restricted to the fenced area;
- D.** The jacking or boring pit will be located outside the pavement structure.

3.3.10.5. OVERBREAKAGE

Extreme care must be taken during jacking or boring operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreaks shall be pressure grouted.

3.3.11. LONGITUDINAL GAS OR PRODUCT LINES INSIDE THE CONTROL OF ACCESS

New longitudinal gas or product lines will not be permitted to be installed within the control of access lines in any location other than within an ADOT established utility corridor, except in special cases installations of longitudinal gas or product lines may be permitted only under strictly controlled conditions. In each of these special cases, the utility owner must show that:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned future expansion of the highway;

- C. Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- F. The accommodation will not be constructed and/or maintained by direct access from any traffic lane or connecting ramp within the controlled access;
- G. Individual service connections, valves, manholes, or other items requiring access will not be allowed inside the control of access except in established utility corridors;
- H. Vents and drains shall be located and constructed so as not to interfere with the highway construction operation and maintenance. The preferable location is outside the control of access near the control of access lines or right-of-way line.

3.3.12. LONGITUDINAL GAS LINES OR PRODUCT LINES OUTSIDE OF CONTROL OF ACCESS ON CONTROLLED ACCESS HIGHWAYS

New gas and volatile fluids lines will be allowed to be installed longitudinally within the rights-of-way outside the control of access lines provided the following conditions are met:

- A. The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B. The accommodation will not interfere with or impair the planned future expansion of the highway;
- C. Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the

ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;

- F. Individual service connections, valves, manholes or other items requiring access will not be allowed in frontage roads pavement surface or inside the control of access except in established utility corridors.

3.3.13. TUNNELS

Gas lines or flammable liquid lines will not be permitted in any vehicular tunnel under any circumstances.

3.3.14. GATES

3.3.14.1. EXISTING GATES

Existing gates may be permitted to remain, except in areas where the pipeline company has other means of access to their facilities by an access road or frontage road from an interchange. Existing gates must be locked at all times. Any rights of access are not transferable or assignable by the utility. Abuse of this privilege will be just cause for removal of existing gates.

3.3.14.2. NEW GATES

New access gates will not be permitted on an existing controlled access highway except where there are no other means of access to the facilities from outside the control of access.

3.4. TELEPHONE AND TV CABLE/ FIBER OPTICS IN CONTROLLED ACCESS HIGHWAY

3.4.1. CONFLICTS

The State assumes no liability for conflicts with existing underground or overhead utilities. It is further understood the utility will, at its expense (except when the utility has prior rights), remove, relocate, or alter its facilities within the right-of-way when required by ADOT.

3.4.2. POTHOLES

Potholes will not be allowed on any completed section of the highway or ramp paved area. Potholes in unpaved areas and on frontage roads will be allowed. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requirements of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

3.4.3. OPEN CUTS

Open cuts will not be permitted on any completed section of the highway or ramps. Open cuts may be permitted where the roadway surfacing has not been completed. Open cuts in unpaved areas may be permitted outside the control of access. Open cuts on frontage or cross roads require pavement replacement with the same type material as the existing roadway.

3.4.3.1. BACKFILL MATERIAL

All installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism areas shall be backfilled as per the pothole requirements in Section 3.4.2.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100
¾ inches	60–100

No. 8 35-80
No. 200 0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

3.4.3.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than 3 inches shall be removed from the excavation before backfill is placed.

Where a utility structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8”) inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4’) feet in depth. The maximum water content of the slurry mixture shall be 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

3.4.3.3. COMPACTION OF BACKFILL

In pavement areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

3.4.3.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

Asphaltic Concrete Pavement minimum replacement will be 100 feet along the center line of the highway, 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

The Asphaltic Concrete material will be hot material conforming to Section 409 of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction", except for the payment provision.

3.4.3.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot each side. Any existing PCCP slab disturbed will be replaced in full. The surface texture and grade will match the existing pavement surface.

Portland Cement Concrete Pavement will conform to Section 401 of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction", except for payment provision.

3.4.4. DEPTH OF COVER

Direct burial cable shall have a minimum installation cover of 48" forty-eight inches as defined in section 2.1.9. Conduit or ducts shall have a minimum depth of cover of (36") thirty-six inches as defined in section 2.1.9. The conduit or ducts shall be continuous within the control of access

3.4.5. MANHOLES

Individual service connections, manholes, or other items requiring access will not be allowed inside the control of access except in established utility corridors. Maintenance vehicles accessing manholes will not be permitted within any controlled access right-of-way, the traveled portion of any bridge, crossroad, frontage, or ramp road.

3.4.6. CROSSINGS

3.4.6.1. GENERAL

Telephone and TV cables may be permitted to cross over or under all highways, with the following conditions:

- A.** No individual service connections, manholes or other items requiring access will be allowed inside the control of access except in established utility corridors;
- B.** Direct burial cable, conduit or ducts may be installed in open cuts during highway construction prior to paving;
- C.** May be installed in a jacked or bored conduit or duct after highway construction;
- D.** Must be maintained from outside the control of access.

3.4.6.2. UNDERGROUND

Underground installation is preferred.

3.4.6.3. VERTICAL CLEARANCE

Aerial crossings shall comply with the vertical clearances specified in the National Electrical Safety Code, Institute of Electrical and Electronics Engineers, Inc., "Safety Rules for the Installation and Maintenance of Electrical Supply and Communications Lines" and "Arizona Encroachments in Highway Rights of Way, Rule No. R-17-3-502" (Title 17, Chapter 3). When on joint use poles with electric lines, the vertical clearances must comply with the National Electric Safety Code (NESC), ANSI C2, and the Institute of Electrical and Electronic Engineers (IEEE).

3.4.7. JACKING OR BORING

3.4.7.1. CONDUIT

Conduit will be required for jacked or bored roadway crossings.

3.4.7.2. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

3.4.7.3. BENTONITE SLURRY BORING

Conduit may be Bentonite clay slurry bored or drilled under the following conditions:

- A.** Bentonite slurry must be controlled for the existing soil conditions;

- B. Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C. Drilling fluid shall contain a minimum of 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D. No other drilling fluid will be allowed.

3.4.7.4. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A. The jacking or boring pit area will be fenced to keep the public out of the pit;
- B. All work vehicles and equipment will be restricted to the fenced area;

3.4.7.5. JACKING INSIDE 30 FEET

Jacking or boring pits will not be permitted in the median within 30 feet of a traveled lane. Jacking or boring pit may be allowed within 30 feet of the edge of the right shoulder with the following restrictions:

- A. The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B. The jacking or boring pit area will be fenced to keep the public out of the pit;
- C. All work vehicles and equipment will be restricted to the fenced area;
- D. The jacking or boring pit will be located outside the pavement structure;

3.4.7.6. OVERBREAKAGE

Extreme care must be taken during jacking or boring operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreaks shall be pressure grouted.

3.4.8. STRUCTURES

Provisions may be made during the design of a structure to provide for cable or conduit crossing where the design of the structure will permit such installation and when approved by Bridge Engineer. The utility owner will be responsible for all additional costs.

3.4.8.1. DESIGN

The utility owner shall be responsible for the design of utility facilities and to supply the Bridge Engineer with the following information:

- A.** Number and size of conduits and/or casings;
- B.** Total combined weight of conduit, cable, casing, location of all conduit runs within the structure and shall design the access openings as required;
- C.** Telephone or Cable TV conduit, supports, brackets, or other related items will not be permitted to be suspended below the structure, or attached to the exterior of any existing or new structure;
- D.** Points of access to the conduit, duct or cable must not interfere with traffic. Manholes from bridge crossings will not be in the traveled roadway including cross street.

3.4.9. LONGITUDINAL TELEPHONE OR TV CABLE

3.4.9.1. INSIDE OF CONTROL OF ACCESS

New longitudinal telephone or TV cable lines will not be permitted to be installed within the control of access lines in any location other than within an ADOT established utility corridor except in special cases installations of longitudinal telephone or TV cable lines may be permitted only under strictly controlled conditions. In each of these special cases, the utility owner must show that:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned future expansion of the highway;
- C.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic, and economic effects of the locations under consideration;
- D.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E.** State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;

- F. The accommodation will not be constructed and/or maintained by direct access from any traffic lane or connecting ramp within the controlled access;
- G. Individual service connections, valves, manholes, or other items requiring access will not be allowed inside the control of access except in established utility corridors;
- H. No above ground facility is within the clear zone.

3.4.9.2. OUTSIDE OF CONTROL OF ACCESS ON CONTROLLED ACCESS HIGHWAYS

New telephone or TV cable will be allowed to be installed longitudinally within the rights-of-way outside the control of access lines of state highways provided the following conditions are met:

- A. The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B. The accommodation will not interfere with or impair the planned future expansion of the highway;
- C. Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic, and economic effects of the locations under consideration;
- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- F. Individual service connections, manholes, or other items requiring access will not be allowed in frontage road pavement surfaces or inside the control of access except in established utility corridors;
- G. Overhead guys, anchors, or stub poles will not be permitted within the clear zone of the controlled access traffic lane as described in AASHTO "Roadside Design Guide".

3.4.10. PREFERRED LONGITUDINAL LOCATION

The preferred location of longitudinal utilities within highway rights-of-way will be between highway open channel drainage facility and right-of-way fence or as close to the right-of-way line as is practical.

3.5. IRRIGATION IN CONTROLLED ACCESS HIGHWAY

3.5.1. CONFLICTS

The State assumes no liability for conflicts with existing underground or overhead utilities. It is further understood the utility will at its expense (except when the utility has prior rights), remove, relocate, or alter its facilities within the right-of-way when required by ADOT.

3.5.2. POTHoles

Potholes will not be allowed on any completed section of the highway or ramp paved area. Potholes in unpaved areas and on frontage roads will be allowed. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requires of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

3.5.3. OPEN CUTS

Open cuts will not be permitted on any completed section of the highway or ramps. Open cuts may be permitted where the roadway surfacing has not been completed. Open cuts in unpaved areas may be permitted outside the control of access. Open cuts on frontage or cross roads require pavement replacement with the same type material as the existing roadway

3.5.3.1. BACKFILL MATERIAL

All installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism shall be backfilled as per the pothole requirements in Section 3.5.2.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100

¾ inches 60–100

No. 8 35-80

No. 200 0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

3.5.3.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than three (3”) inches shall be removed from the excavation before backfill is placed.

Where an irrigation structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8”) inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4”) inches in depth. The maximum water content of the slurry mixture shall be 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

3.5.3.3. COMPACTION OF BACKFILL

In paved areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

3.5.3.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

Asphaltic Concrete Pavement minimum replacement will be 100 feet along the center line of the highway, 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

The Asphaltic Concrete material will be hot material conforming to Section 409, except for the payment provision, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction".

3.5.3.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot. Any existing PCCP slab disturbed will be replaced in full. The surface grade and texture will match the existing pavement surface.

Portland Cement Concrete Pavement will conform to Section 401, except for payment provision, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction".

3.5.4. POINTS OF ACCESS

Valves, manholes, irrigation gates and other facilities requiring access will not be permitted inside the control of access, except in ADOT Established Utility Corridors, but will be allowed outside the control of access.

3.5.5. CROSSINGS

3.5.5.1. OPEN DITCH IRRIGATION:

- A.** Open ditch irrigation crossings will not be allowed within controlled access lines;

- B. Open ditch irrigation crossings will be allowed outside the controlled access lines at least thirty (30') feet from any traveled lanes.

3.5.5.2. PIPED IRRIGATION

Piped irrigation crossings will be allowed with three (3') feet minimum cover with appropriate 'D' load pipe.

3.5.6. IRRIGATION ON ROADWAY BRIDGES

Irrigation facilities will not be allowed on bridges used by the traveling public

3.5.7. JACKING OR BORING

3.5.7.1. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

3.5.7.2. BENTONITE SLURRY BORING

Bentonite clay slurry boring or drilling will be allowed under the following conditions:

- A. Bentonite slurry must be controlled for the existing soil conditions;
- B. Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C. Drilling fluid shall contain a minimum of 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D. No other drilling fluid will be allowed.

3.5.7.3. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A. The jacking or boring pit area will be fenced to keep the public out of the pit;
- B. All work vehicles and equipment will be restricted to the fenced area.

3.5.7.4. JACKING INSIDE 30 FEET

Jacking or boring pits will not be permitted in the median within 30 feet of a traveled lane. Jacking or boring pit may be allowed within 30 feet of the edge of the right shoulder with the following restrictions:

- A.** The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- C.** All work vehicles and equipment will be restricted to the fenced area;
- D.** The jacking or boring pit will be located outside the pavement structure.

3.5.7.5. OVERBREAKAGE

Extreme care must be taken during jacking or boring operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreaks shall be pressure grouted.

3.5.8. LONGITUDINAL IRRIGATION DITCHES OR PIPE LINES

3.5.8.1. INSIDE OF CONTROL OF ACCESS

Longitudinal irrigation ditches or pipe lines will not be permitted inside the control of access.

3.5.8.2. OUTSIDE OF CONTROL OF ACCESS

Longitudinal irrigation facilities will be allowed outside control of access under the following conditions:

- A.** Open ditches will be allowed at least 30 feet from traveled lane or outside clear zone;
- B.** Pipe line will be allowed with the following conditions:
 - i.** Connection with open ditches must be at least 30 feet from traveled lane or outside clear zone;
 - ii.** Control gates, valves and other points of access must not interfere with the roadway, its use or clear zone.

- C.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- D.** The accommodation will not interfere with or impair the planned future expansion of the highway;
- E.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic, and economic effects of the locations under consideration.
- F.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- G.** State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- H.** The accommodation will not be constructed and/or maintained by direct access from any traffic lane or connecting ramp within the controlled access;
- I.** No above ground facility is within the clear zone.

4. UTILITY GUIDELINES IN UNCONTROLLED ACCESS HIGHWAYS

4.1. ELECTRIC LINES IN UNCONTROLLED ACCESS HIGHWAYS

4.1.1. OVERHEAD ELECTRIC LINE CODES

The vertical clearance to overhead electric lines crossing highways shall be determined by the National Electrical Safety Code, ANSI C2, Institute of Electrical and Electronics Engineers, Inc., and Arizona Encroachments in Highway Rights of Way, Rule No. R-17-3-502" (Title 17, Chapter 3).

4.1.2. CONFLICTS

The State assumes no liability for conflicts with existing or proposed utilities upon approving a permit for any overhead or underground utility. It is further understood the utility will, at its expense (except when the utility has prior rights), relocate, or alter its facilities within the right-of-way when required by ADOT.

4.1.3. POTHoles

Potholes in paved and unpaved areas on uncontrolled access highways will be allowed with a permit. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requires of alternate method (2) under Open Cuts. The pavement will be replaced in kind.

4.1.4. OPEN CUTS

Open cuts on uncontrolled access highways including their right-of-way will be allowed. Open cuts in paved area will require pavement replacement with the same type and thickness material as the existing roadway.

4.1.4.1. BACKFILL MATERIAL

All installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism areas shall be backfilled as per the pothole requirements in Section 4.1.3.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100
¾ inches	60–100
No. 8	35-80
No. 200	0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

4.1.4.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than 3 inches shall be removed from the excavation before backfill is placed.

Where a structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8") inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4') feet in depth. The maximum water content of the slurry mixture shall be 35 gallon of water per ton of backfill material. Aggregate slurry shall be thoroughly mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

4.1.4.3. COMPACTION OF BACKFILL

In paved areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

4.1.4.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

The Asphaltic Concrete material will be hot material conforming to Section 409, except for the payment provision, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction".

- A. STANDARD ASPHALTIC CONCRETE PAVEMENT REPLACEMENT -** Asphaltic Concrete Pavement roadways require a minimum replacement of 100 feet of the Asphaltic Concrete Pavement along the centerline of the highway 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.
- B. EXCEPTIONS MAY BE GRANTED BY THE DISTRICT ENGINEER -** For Asphaltic Concrete Pavement in congested areas, the District Engineer may allow the pavement to be repaired with patches two (2') feet larger than the excavation on all sides of open cut.
- C. LONGITUDINAL OPEN CUTS IN ASPHALTIC CONCRETE PAVEMENT -** Longitudinal utility open cuts on Asphaltic Concrete Pavement roadways will require the Asphaltic Concrete Pavement be replaced a minimum of 100 feet along the centerline of the highway, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

4.1.4.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement (PCCP) will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot. Any existing PCCP slab disturbed will be replaced in full. The surface grade and texture will match the existing pavement surface.

Portland Cement Concrete Pavement will conform to Section 401, except for payment provision, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction."

4.1.5. DEPTH OF COVER

Direct burial cable shall have a minimum cover of forty-eight (48") inches. Underground electric lines located within conduit or concrete ducts shall have a minimum cover of thirty-six (36") inches.

4.1.6. GROUND MOUNTED EQUIPMENT

All ground mounted equipment shall be installed in such a manner that sidewalks or walkways are not obstructed, traffic vision is not obscured, and damage from vehicles and vandalism is minimized.

4.1.7. METERS

Meters, switches, and other appurtenances serving private individuals or business shall be located as close to the right-of-way line as possible.

4.1.8. VAULTS AND MANHOLES

All manholes and underground vault access shall be located outside of any traveled portion of the highway. Service vehicles for manholes and vaults shall not interfere with any traffic lane.

4.1.9. URBAN AREAS

In areas where sidewalks have been installed, all poles, structures, and guys shall be placed behind the sidewalk, if possible. Not under any circumstances shall any pole, structure or guy be placed within twenty-four (24") inches from the face of curb. If they are placed within the sidewalk there must be sufficient room for a wheelchair to pass on the sidewalk.

4.1.10. UNDERGROUND ELECTRIC CABLE

Underground electric cable may be placed within the right-of-way of uncontrolled access highway, provided it does not interfere with the normal maintenance and operation of the highway.

4.1.11. CROSSINGS

Crossings will be permitted on all uncontrolled access highways providing they comply with Section 4.1.13, A-D. They should cross on a line generally perpendicular and under the highway alignment where practical.

4.1.12. JACKING AND BORING

4.1.12.1. CONDUIT

Conduit will be required for jacked or bored roadway crossings.

4.1.12.2. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

4.1.12.3. BENTONITE SLURRY BORING

Conduit may be Bentonite clay slurry bored or drilled under the following conditions:

- A.** Bentonite slurry must be controlled for the existing soil conditions;
- B.** Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C.** Drilling fluid shall contain a minimum of 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D.** No other drilling fluid will be allowed.

4.1.12.4. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- B.** All work vehicles and equipment will be restricted to the fenced area.

4.1.12.5. JACKING INSIDE 30 FEET

Jacking or boring pit may be allowed within 30 feet of the edge of the traveled lane with the following restrictions:

- A.** The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- C.** All work vehicles and equipment will be restricted to the fenced area;
- D.** The jacking or boring pit will be located outside the pavement structure.

4.1.12.6. OVERBREAKAGE

Extreme care must be taken during jacking or boring operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreaks shall be pressure grouted.

4.1.13. LONGITUDINAL ENCROACHMENTS

Electric distribution lines may be permitted longitudinally along an uncontrolled access highway providing the following conditions are met:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned future expansion of the highway;
- C.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E.** State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;

- F.** Electric facilities will be placed as close to the right-of-way line as possible within the National Electrical Safety Code, and State, City or County Codes. Where possible, underground electric lines should occupy the same trench with gas lines, underground telephone, and TV cables in urban areas;
- G.** Where other pole lines exist within the right-of-way joint use poles will be utilized with telephone and cable TV, where possible.

4.2. WATER & SEWER LINES IN UNCONTROLLED ACCESS HIGHWAYS

4.2.1. CONFLICTS

The State assumes no liability for conflicts with existing underground or overhead utilities. It is further understood the permittee will at its expense remove, relocate, or alter its facilities within the right-of-way when required by ADOT.

4.2.2. POTHoles

Potholes will be allowed in paved and unpaved areas on uncontrolled access highways with a permit. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requires of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

4.2.3. OPEN CUTS

Open cuts will be allowed on uncontrolled access highways and their right-of-way. Open cuts in paved area will require pavement replacement with the same type and thickness material as the existing roadway.

4.2.3.1. BACKFILL MATERIAL

All pipe installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism shall be backfilled as per the pothole requirements in Section 4.2.2.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100
¾ inches	60–100
No. 8	35-80

No. 200 0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 – 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

4.2.3.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than three (3”) inches shall be removed from the excavation before backfill is placed.

Where a structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8”) inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4’) feet in depth. The maximum water content of the slurry mixture shall be 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

4.2.3.3. COMPACTION OF BACKFILL

In paved areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

4.2.3.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

The Asphaltic Concrete material will be hot material conforming to Section 409, except for the payment provision, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction".

A. STANDARD ASPHALTIC CONCRETE PAVEMENT REPLACEMENT -

Asphaltic Concrete Pavement roadways require a minimum replacement of 100 feet of the Asphaltic Concrete Pavement along the centerline of the highway, 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

B. EXCEPTIONS MAY BE GRANTED BY THE DISTRICT ENGINEER -

For Asphaltic Concrete Pavement in congested areas, the District Engineer may allow the pavement to be repaired with patches two (2') feet larger than the excavation on all sides of open cut.

C. LONGITUDINAL OPEN CUTS IN ASPHALTIC CONCRETE PAVEMENT -

Longitudinal utility open cuts on Asphaltic Concrete Pavement roadways will require the Asphaltic Concrete Pavement be replaced a minimum of 100 feet along the centerline of the highway, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

4.2.3.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1'). The surface texture and grade will match the existing pavement surface. Any existing PCCP slab disturbed will be replaced in full.

Portland Cement Concrete Pavement will conform to Section 401, except for payment provision, of the "State of Arizona Department of

4.2.4. DEPTH OF COVER

All water or sewer lines located within the right-of-way shall have a minimum cover, as defined in Section 2.1.9 of thirty-six (36") inches.

4.2.5. WATER METERS

Water meters shall be located as close to the right-of-way line as possible.

4.2.6. FIRE HYDRANTS

Fire hydrants shall be located behind the sidewalk, six (6") feet from the curb return, except for downtown areas and business centers where the sidewalk extends to the right-of-way line. In those instances, the hydrants shall have at least two (2') feet of clearance behind the curb. If placed within the sidewalk sufficient room must be provided to allow a wheelchair to pass on the sidewalk.

4.2.7. MANHOLES

Where possible manholes should be placed outside the roadway pavement.

4.2.8. CROSSINGS

Crossings will be permitted on all uncontrolled access highways if they comply with 4.2.13.1, A - C, E & F. They shall cross on a line generally perpendicular to the highway where practical.

4.2.9. STORM DRAINS

Water or sewer lines will not be permitted within any drainage structure, except under temporary emergency conditions.

4.2.10. WATER OR SEWER LINES THROUGH OR AFFIXED TO EXISTING BRIDGES

4.2.10.1. GENERAL

Any water or sewer line carried on or through an existing bridge at the time the highway route is improved may continue to be so carried provided that the following conditions are met:

- A. The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B. The accommodation will not interfere with or impair the planned future expansion of the highway;
- C. Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and

indirect environmental, aesthetic and economic effects of the locations under consideration;

- D. Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or properties, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.

4.2.10.2. AFTER HIGHWAY BRIDGE IMPROVEMENT

A new water or sewer line will not be permitted to be installed on, within or through an existing bridge after the time the highway route is improved, except for special cases.

4.2.10.3. SPECIAL CASES

These special cases will generally be limited to major river crossings, within long sections of depressed highway, or on projects involving bridge rehabilitation or replacement where there is an existing water or sewer line attachment.

4.2.11. JACKING OR BORING

Conduit or sleeve will be required for jacked or bored roadway crossings.

4.2.11.1. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

4.2.11.2. BENTONITE SLURRY BORING

Bentonite clay slurry boring or drilling will be allowed under the following conditions:

- A. Bentonite slurry must be controlled for the existing soil conditions;
- B. Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C. Drilling fluid shall contain a minimum of 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D. No other drilling fluid will be allowed.

4.2.11.3. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- B.** All work vehicles and equipment will be restricted to the fenced area.

4.2.11.4. JACKING INSIDE 30 FEET

Jacking or boring pit may be allowed within 30 feet of the edge of the traveled lane with the following restrictions:

- A.** The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- C.** All work vehicles and equipment will be restricted to the fenced area;
- D.** The jacking or boring pit will be located outside the pavement structure.

4.2.11.5. OVERBREAKAGE

Extreme care must be taken during jacking or boring operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreaks shall be pressure grouted.

4.2.12. WATER OR SEWER LINES THROUGH OR AFFIXED TO NEW BRIDGES

4.2.12.1. GENERAL GUIDELINE

It is the general guideline that no water or sewer lines will be permitted to be attached to bridge structures. However, ADOT will consider exceptions to the general guideline on a case-by-case basis where it can be demonstrated that there are no reasonable and prudent alternatives to the attachment of the rigid utility line on a structure.

4.2.12.2. SPECIAL CASES

These special cases will generally be limited to major river crossing, or on projects involving bridge rehabilitation or replacement where there is an existing water or sewer line attachment.

4.2.12.3. UTILITY OWNER PAY

If water or sewer line crossings are considered through or affixed to new bridges, the utility owner must pay all additional design, construction and maintenance costs.

4.2.12.4. DESIGN

The utility owner shall be responsible for the design of utility facilities and to supply the Bridge Engineer with the following information:

- A.** Size and schedule of pipe;
- B.** Size and schedule of casings and sleeves as well as location and method of relief on the casing or sleeve;
- C.** Total combined weight of transmission and carrier pipe, casings, hangers, supports, expansion joints and other related items as well as the water or sewerage.

4.2.12.5. ACCESS

Valves, manholes and other points of access will not be near the bridge, which would impair traffic.

4.2.12.6. CASINGS

All water or sewer lines installed on or within a structure shall be inserted within a casing and vented outside the bridge, unless in the opinion of the Bridge Engineer it would not be required.

4.2.12.7. BRIDGE ENGINEER

The ADOT Bridge Engineer shall determine the final location of all lines installed within a structure, and shall design the access openings as required.

4.2.12.8. ATTACHMENTS (Bridge)

Water or sewer lines, supports, brackets, or other related items, will not be permitted to be suspended below the girders or attached outside of the exterior girder of any new or existing structure.

4.2.13. LONGITUDINAL ENCROACHMENTS

4.2.13.1. GUIDELINES

Water or sewer lines may be permitted longitudinally along uncontrolled access highways providing the following conditions are met:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned expansion of the highway;
- C.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D.** Water mains shall be located as close to the right-of-way line as possible, except in urban areas where permission may be granted to place the lines under the traveled portion of the roadway;
- E.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- F.** State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT Right-of-Way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents.

4.3. GAS LINES & PRODUCT LINES (VOLATILE FLUIDS) IN UNCONTROLLED ACCESS HIGHWAYS

4.3.1. GAS AND VOLATILE FLUID LINES

All Gas and Volatile fluid lines will follow safety regulations in U. S. Department of Transportation *Title 49 of the Code of Federal Regulations Chapter 601.*

4.3.2. CONFLICTS

The State assumes no liability for conflicts with existing or proposed utilities upon approving a permit for any overhead or underground utility. It is further understood the utility will, at its expense (except when the utility has prior rights), remove, relocate, or alter its facilities within the right-of-way when required by ADOT.

4.3.3. POTHoles

Potholes will be allowed in paved and unpaved areas on uncontrolled access highways with a permit. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requires of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

4.3.4. OPEN CUTS

Open cuts will be allowed on uncontrolled access highways and their right-of-way. Open cuts in paved area will require pavement replacement with the same type and thickness material as the existing roadway. Open cuts in unpaved areas may be backfilled with existing material as per the pothole requirements.

4.3.4.1. BACKFILL MATERIAL

All installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism shall be backfilled as per the pothole requirements in *Section 4.3.3.*

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay

or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100
¾ inches	60-100
No. 8	35-80
No. 200	0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

4.3.4.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than three (3") inches shall be removed from the excavation before backfill is placed.

Where a structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8") inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4') feet in depth. The maximum water content of the slurry mixture shall be 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

4.3.4.3. COMPACTION OF BACKFILL

In paved areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

4.3.4.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

The Asphaltic Concrete material will be hot material conforming to Section 409, except for the payment provision, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction".

A. STANDARD ASPHALTIC CONCRETE PAVEMENT REPLACEMENT -

Asphaltic Concrete Pavement roadways require a minimum replacement of 100 feet of the Asphaltic Concrete Pavement along the centerline of the highway, 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

B. EXCEPTIONS MAY BE GRANTED BY THE DISTRICT ENGINEER -

For Asphaltic Concrete Pavement in congested areas, the District Engineer may allow the pavement to be repaired with patches two (2') feet larger than the excavation on all sides of open cut.

C. LONGITUDINAL OPEN CUTS IN ASPHALTIC CONCRETE PAVEMENT -

Longitudinal utility open cuts on Asphaltic Concrete Pavement roadways will require the Asphaltic Concrete Pavement be replaced a minimum of 100feet along the centerline of the highway, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

4.3.4.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot. Any existing PCCP slab disturbed will be replaced in full. The surface texture and grade will match the existing pavement surface. Portland Cement Concrete Pavement will conform to Section 401, except for payment provision, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction."

4.3.5. DEPTH OF COVER

The minimum installation cover as defined in Section 2.1.9 for a gas line or product lines is as follows:

4.3.5.1. High Pressures Gas or Volatile Fluids (60 psi and up):

- A. Sixty (60") inches;
- B. Reinforced concrete floating slab two (2') feet wider than the gas line trench may be substituted for twenty-four (24") inches of the required cover;

4.3.5.2. Low Pressure Gas or Volatile Fluids (under 60 psi):

- A. Forty-eight (48") inches;
- B. Reinforced concrete floating slab, two (2') feet wider than the gas line trench, may reduce the required cover to three (3') feet;

4.3.6. FLOATING SLABS (PROTECTIVE SLABS)

4.3.6.1. REINFORCED CONCRETE SLAB

A six (6") inches thick reinforced concrete slab, one (1') foot wider on each side of the pipeline trench, may be used on an existing or new pipeline for the protection against traffic, dead loads or highway construction operations and maintenance as a substitute for some of the required cover.

4.3.6.2. OWNERS OPTION

The installation of a floating slab shall be at the option of the pipeline owner.

4.3.7. GAS METERS

Gas meters shall be located as close to the right-of-way line as possible.

4.3.8. CROSSINGS

Crossings will be permitted on all uncontrolled access highways if they comply with 4.3.5, 4.3.6 and 4.3.12 A, B, C, D and E. They shall cross on a line generally perpendicular to the highway where practical.

4.3.9. STORM DRAINS

Gas or volatile lines will not be permitted within any drainage structure, except under temporary emergency conditions.

4.3.10. STRUCTURES

It is the general guideline that no rigid gas or volatile fluid lines will be permitted to be attached to bridge structures. However, ADOT may consider exceptions to the general guideline on a case-by-case basis where it can be demonstrated that there are no reasonable and prudent alternatives to the attachment of the rigid utility line on structure.

Flexible gas and volatile fluid lines may be placed in sealed sleeves which are vented to the outside of the bridge if it does not adversely affect the structural integrity or safety of the bridge.

When gas or volatile fluid lines are approved for attachment to a bridge, provision must be made during the design of the structure to provide for casings, sleeves, access openings and other appurtenances and special provisions for safety will be required, and the utility company will be responsible for the additional costs.

Manholes or points of access will not be permitted at the ends of bridges in the roadway pavement.

4.3.10.1. SPECIAL CASES

These special cases will generally be limited to a major river crossing, or on projects involving bridge rehabilitation or replacement where there is an existing gas line attachment.

4.3.10.2. SAFETY AND COST

When gas or flammable liquid lines are approved for attachment to a bridge, special provisions for safety will be required, and the utility will be responsible for the additional costs.

4.3.11. JACKING OR BORING

4.3.11.1. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

4.3.11.2. BENTONITE SLURRY BORING

Bentonite clay slurry boring or drilling will be allowed under the following conditions:

- A.** Bentonite slurry must be controlled for the existing soil conditions;
- B.** Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C.** Drilling fluid shall contain a minimum of 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D.** No other drilling fluid will be allowed.

4.3.11.3. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- B.** All work vehicles and equipment will be restricted to the fenced area.

4.3.11.4. JACKING INSIDE 30 FEET

Jacking or boring pit may be allowed within 30 feet of the edge of the traveled lane with the following restrictions:

- A.** The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- C.** All work vehicles and equipment will be restricted to the fenced area;
- D.** The jacking or boring pit will be located outside the pavement structure.

4.3.11.5. OVERBREAKAGE

Extreme care must be taken during jacking or boring operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreaks shall be pressure grouted.

4.3.12. LONGITUDINAL ENCROACHMENTS

Gas lines and product lines (volatile fluids) may be permitted longitudinally along an uncontrolled access highway providing the following conditions are met:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned future expansion of the highway;
- C.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental aesthetic and economic effects of the locations under consideration;
- D.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E.** State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT right-of-way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- F.** Gas distribution lines are to be located as close to the right-of-way line as possible on uncontrolled access highways except in urban areas where permission may be granted to place the lines under the traveled portion of the roadway. Where possible, gas lines should occupy the same trench with underground telephone, electric cables and TV cables in urban areas.

4.3.13. TUNNELS

Gas lines or flammable liquid lines will not be permitted in any vehicular tunnel under any circumstances.

4.4. TELEPHONE LINES AND TV CABLES/FIBER OPTICS IN UNCONTROLLED ACCESS HIGHWAYS

4.4.1. CONFLICTS

The State assumes no liability for conflicts with existing or proposed utilities upon approving a permit for any overhead or underground utility. It is further understood the utility will, at its expense (except when the utility has prior rights), remove, relocate, or alter its facilities within the right-of-way when required by ADOT.

4.4.2. POTHOLES

Potholes will be allowed in paved and unpaved areas on uncontrolled access highways with a permit. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requires of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

4.4.3. OPEN CUTS

Open cuts will be allowed on uncontrolled access highways and their right-of-way. Open cuts in paved area will require pavement replacement with the same type and thickness material as the existing roadway. Open cuts in unpaved areas may be backfilled with existing material as per the pothole requirements.

4.4.3.1. BACKFILL MATERIAL

All installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism shall be backfilled as per the pothole requirements in Section 4.4.2.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
-------------------	------------------------

3 inches	100
¾ inches	60–100
No. 8	35-80
No. 200	0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B. (Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

4.4.3.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than three (3”) inches shall be removed from the excavation before backfill is placed.

Where a structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8”) inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4’) feet in depth. The maximum water content of the slurry mixture shall be 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly

mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

4.4.3.3. COMPACTION OF BACKFILL

In paved areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

4.4.3.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

The Asphaltic Concrete material will be hot material conforming to Section 409 of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction", except for the payment provision.

A. STANDARD ASPHALTIC CONCRETE PAVEMENT REPLACEMENT -

Asphaltic Concrete Pavement roadways require a minimum replacement of 100 feet of the Asphaltic Concrete Pavement along the centerline of the highway, 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

B. EXCEPTIONS MAY BE GRANTED BY THE DISTRICT ENGINEER -

For Asphaltic Concrete Pavement in congested areas, the District Engineer may allow the pavement to be repaired with patches two (2') feet larger than the excavation on all sides of open cut.

C. LONGITUDINAL OPEN CUTS IN ASPHALTIC CONCRETE PAVEMENT -

Longitudinal utility open cuts on Asphaltic Concrete Pavement roadways will require the Asphaltic Concrete Pavement be replaced a minimum of 100 feet along the centerline of the highway, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

4.4.3.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement (PCCP) will be replaced 6 inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot. Any existing PCCP slab disturbed will be replaced in full. The surface grade and texture will match the existing pavement surface.

Portland Cement Concrete Pavement will conform to Section 401 of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction", except for payment provision.

4.4.4. DEPTH OF COVER

Direct burial cable shall have a minimum installation cover as defined in Section 2.1.9 of forty-eight (48") inches and conduit or ducts shall have a minimum depth of cover of three (3') feet.

4.4.5. UNDERGROUND CABLE

Underground cable or conduit may be placed within the right-of-way of any uncontrolled access highway or within any structure (except drainage), provided it does not interfere with the normal maintenance and operation of the highway.

4.4.6. MANHOLES AND VAULTS

All manholes and underground vault access shall be located outside of any traveled portion of the highway. Vehicles and equipment when accessing the underground facilities will not interfere with traffic.

4.4.7. URBAN AREAS

In urban areas where sidewalks have been installed, all poles, structures, and guys shall be placed behind the sidewalk, if possible. Under no circumstances shall any pole, structure or guy be placed within twenty-four (24") inches from the face of curb or obstruct the sidewalk area. If placed within the sidewalk sufficient room must be provided to allow a wheelchair to pass on the sidewalk.

4.4.8. CROSSINGS

Crossings will be permitted on all uncontrolled access highways providing they comply with Sections 4.4.11, A - D, F, and G. They should cross on a line generally perpendicular and under the highway alignment where practical.

4.4.9. JACKING OR BORING

4.4.9.1. CONDUIT

Conduit will be required for jacked or bored roadway crossings.

4.4.9.2. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

4.4.9.3. BENTONITE SLURRY BORING

Conduit may be bentonite clay slurry bored or drilled under the following conditions:

- A.** Bentonite slurry must be controlled for the existing soil conditions;
- B.** Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C.** Drilling fluid shall contain a minimum 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D.** No other drilling fluid will be allowed.

4.4.9.4. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- B.** All work vehicles and equipment will be restricted to the fenced area.

4.4.9.5. JACKING INSIDE 30 FEET

Jacking or boring pit may be allowed within 30 feet of the edge of the traveled lane with the following restrictions:

- A.** The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- C.** All work vehicles and equipment will be restricted to the fenced area;
- D.** The jacking or boring pit will be located outside the pavement structure.

4.4.9.6. OVERBREAKAGE

Extreme care must be taken during this operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreaks and/or borings shall be pressure grouted.

4.4.10. STRUCTURES

The utility shall design all hangers and/or other supports required for the installation of its cable on or within any structure. The Bridge Engineer shall approve and recommend any changes required in the design of the utility company's hangers and/or supports. Any cable, conduit, hangers or supports shall be furnished and installed by the utility company unless otherwise noted on plans. No facility will be allowed below the girders or outside the exterior girder.

4.4.11. LONGITUDINAL ENCROACHMENTS

Telephone and or TV cable line may be permitted longitudinally along uncontrolled access highways providing the following conditions are met:

- A.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- B.** The accommodation will not interfere with or impair the planned future expansion of the highway;
- C.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic and economic effects of the locations under consideration;
- D.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;
- E.** State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT right-of-way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- F.** Poles or structures shall be located as close to the right-of-way line as possible;
- G.** Where other pole lines exist within the right-of-way joint use poles will be utilized with electric, telephone and cable TV, where possible.

4.5. IRRIGATION IN UNCONTROLLED ACCESS HIGHWAYS

4.5.1. CONFLICTS

The State assumes no liability for conflicts with existing or proposed utilities upon approving a permit for any overhead or underground utility. It is further understood the permittee will, at its expense (except when the utility has prior rights), remove, relocate, or alter its facilities within the right-of-way when required by ADOT.

4.5.2. POTHOLES

Potholes will be allowed in paved and unpaved areas on uncontrolled access highways with a permit. Potholes may be backfilled with the existing material and compacted in lifts, not to exceed eight (8") inches before compaction, with pneumatic or mechanical tamping devices or with slurry conforming to the requires of alternate method (2) under Open Cuts. The pavement will be replaced in-kind.

4.5.3. OPEN CUTS

Open cuts will be allowed on uncontrolled access highways and their right-of-way. Open cuts in paved area will require pavement replacement with the same type and thickness material as the existing roadway. Open cuts in unpaved areas may be backfilled with existing material as per the pothole requirements.

4.5.3.1. BACKFILL MATERIAL

All installations must have adequate protection from the soil conditions encountered.

Open cuts outside the roadway prism shall be backfilled as per the pothole requirements in Section 4.5.2.

Open cuts in the roadway prism will be backfilled with Alternate Method 1 or 2.

A. (Alternate Method 1):

Backfill material may be selected from excavation or from a source selected by the utility. It shall not contain frozen lumps, stones larger than three (3") inches in diameter, chunks of clay or other objectionable material.

Backfill material shall conform to the following gradation (Arizona Test Method 201):

<u>SIEVE SIZE</u>	<u>PERCENT PASSING</u>
3 inches	100

¾ inches	60–100
No. 8	35-80
No. 200	0-12.0

The plasticity index shall not exceed 12 when tested in accordance with the requirements of AASHTO T 90.

Backfill material to be used for unprotected metal pipe shall have a value of resistivity not less than 2000 ohm-cm. and shall have a pH value between 6.0 and 9.0. Tests for pH and resistivity shall be in accordance with the requirements of Arizona Test Method 236.

The required test results will be provided by the utility to ADOT.

B.(Alternate Method 2):

As an alternate to the material requirements of Alternate Method 1, the Engineer may allow material conforming to the following gradation to be used in a slurry mixture in situations where the slurry will be confined by free-draining soil (Arizona Test Method 201):

<u>Sieve size</u>	<u>Percent Passing</u>
1 ½ inches	100
1 inches	90 – 100
No. 8	35 - 80
No. 200	0 - 8.0

The plasticity index shall not exceed 8 when tested in accordance with the requirements of AASHTO T 90

The required test results will be provided by the utility to ADOT.

4.5.3.2. PLACEMENT OF BACKFILL

All material which has loosened or collapsed into the excavation from the adjacent ground and all trash, forms, and rock larger than three (3”) inches shall be removed from the excavation before backfill is placed.

Where an irrigation structure is located within a paved area, all backfill material above finished sub grade elevation shall conform to the requirements of the typical pavement section.

Backfill included in Alternate Method 1 shall be compacted by pneumatic or mechanical tamping devices, and shall be placed in layers not more than eight (8”) inches in depth before compaction.

Backfill included in Alternate Method 2 (slurry) shall be placed in uniform horizontal layers not exceeding four (4’) feet in depth. The maximum water content of the slurry mixture shall 35 gallons of water per ton of backfill material. Aggregate slurry shall be thoroughly mixed in a mixer approved by the Engineer. Unless otherwise approved by the Engineer, the slurry shall be compacted with internal vibrators.

4.5.3.3. COMPACTION OF BACKFILL

In paved areas backfill material shall be compacted to at least 100 percent of the maximum density as determined in accordance with the requirements of Arizona Test Methods Manual. In unpaved areas backfill material shall be compacted to at least 95 percent of the maximum density as determined in the above test methods. The Utility must supply the test result to ADOT.

4.5.3.4. ASPHALTIC CONCRETE PAVEMENT REPLACEMENT

The Asphaltic Concrete material will be hot material conforming to Section 409, except for the payment provision, of the "State of Arizona Department of Transportation Highways Division Standard Specifications for Road and Bridge Construction".

A. STANDARD ASPHALTIC CONCRETE PAVEMENT REPLACEMENT-

Asphaltic Concrete Pavement roadways require a minimum replacement of 100 feet of the Asphaltic Concrete Pavement along the centerline of the highway, 50 feet on either side of the excavation, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

B. EXCEPTIONS MAY BE GRANTED BY THE DISTRICT ENGINEER -

For Asphaltic Concrete Pavement in congested areas, the District Engineer may allow the pavement to be repaired with patches two (2') feet larger than the excavation on all sides of open cut.

C. LONGITUDINAL OPEN CUTS IN ASPHALTIC CONCRETE PAVEMENT-

Longitudinal utility open cuts on Asphaltic Concrete Pavement roadways will require the Asphaltic Concrete Pavement be replaced a minimum of 100 feet along the centerline of the highway, by one lane width. If any Asphaltic Concrete Pavement is disturbed in a lane, the total width of the lane will be replaced. Asphaltic Concrete will be laid with a vibrating or tamper bar screed paving machine only.

4.5.3.5. PORTLAND CEMENT CONCRETE PAVEMENT REPLACEMENT

Portland Cement Concrete Pavement will be replaced six (6") inches thicker than the existing PCCP and keyed under all adjacent PCCP one (1') foot. Any existing PCCP slab disturbed will be replaced in full. The surface grade and texture will match the existing pavement surface.

Portland Cement Concrete Pavement will conform to Section 401, except for payment provision, of the "State of Arizona Department of

4.5.4. DEPTH OF COVER

Irrigation pipe will have a three (3') feet minimum cover as defined in Section 2.1.9 with the proper 'D' load pipe.

4.5.5. OPEN DITCH IRRIGATION

Open ditch irrigation may be allowed thirty (30') feet from travel lane or outside the clear zone, whichever is less.

4.5.6. PIPED IRRIGATION

Piped Irrigation may be allowed with a three (3') feet minimum cover with the proper 'D' load pipe.

4.5.7. JACKING OR BORING

4.5.7.1. WATER BORING

Water boring will not be allowed. Water may be used to lubricate and cool drilling tools, if used in small quantities.

4.5.7.2. BENTONITE SLURRY BORING

Bentonite clay slurry boring or drilling will be allowed under the following conditions:

- A. Bentonite slurry must be controlled for the existing soil conditions;
- B. Drilling system shall not deposit more than one (1) part drilling fluid per one (1) part soil excavated (by volume) to prevent erosion and/or saturation of the soil;
- C. Drilling fluid shall contain a minimum of 0.2 pounds per gallon concentration of suspended Bentonite clay;
- D. No other drilling fluid will be allowed.

4.5.7.3. JACKING OUTSIDE 30 FEET

Jacking or boring pit will be allowed outside of 30 feet from the traveled roadway with the following condition:

- A. The jacking or boring pit area will be fenced to keep the public out of the pit;
- B. All work vehicles and equipment will be restricted to the fenced area.

4.5.7.4. JACKING INSIDE 30 FEET

Jacking or boring pit may be allowed within 30 feet of the edge of the traveled lane with the following restrictions:

- A.** The jacking or boring pit will be protected from the approaching traffic by existing guardrail, existing or Temporary Concrete Barrier wall or other ADOT approved barrier;
- B.** The jacking or boring pit area will be fenced to keep the public out of the pit;
- C.** All work vehicles and equipment will be restricted to the fenced area;
- D.** The jacking or boring pit will be located outside the pavement structure.

4.5.7.5. OVERBREAKAGE

Extreme care must be taken during this operation to guard against the impairment of the earth structure under the pavement and shoulders. All overbreaks and/or borings shall be pressure grouted.

4.5.8. LONGITUDINAL IRRIGATION ENCROACHMENTS

Longitudinal irrigation facilities will be allowed on uncontrolled access highways with the following restrictions:

- A.** Irrigation will not normally be allowed under a roadway longitudinally except in extreme cases.
- B.** Open ditches may be allowed thirty 30 feet minimum from traveled lane or clear zone, whichever is more;
- C.** Control gates, valves and other points of access must not interfere with the roadway, its use or clear zone;
- D.** The accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the highway;
- E.** The accommodation will not interfere with or impair the planned future expansion of the highway;
- F.** Any alternate location would be contrary to the public interest. This determination may require an evaluation of the direct and indirect environmental, aesthetic, and economic effects of the locations under consideration;
- G.** Except in prior rights cases, ADOT will not incur any unreimbursed additional expense or maintenance costs associated with the utility installation;

- H. State shall not be liable for any claims, demands, costs or expenses, including all legal expenses, for loss, damages or injury to any person or property, including third parties' persons or property, due to the Utility's use of the ADOT right-of-way, unless caused by the willful or negligent acts or omissions of ADOT, its officers, or agents;
- I. The accommodation will not be constructed and/or maintained by direct access from any traffic lane or connecting ramp within the controlled access;
- J. No above ground facility is within the clear zone.

5. UTILITY ABANDONMENT IN CONTROLLED AND UNCONTROLLED ACCESS HIGHWAYS

5.1. GENERAL

5.1.1. ABANDONMENT OF UTILITY FACILITIES

Abandonment of Utility Facilities (Abandonment) means the decision by the Utility to no longer use its facilities and notification of such decision to the Arizona Department of Transportation (ADOT). Abandonment shall not be construed to mean any changes in ownership of the facility.

5.1.2. MAINTENANCE OF ABANDONED UTILITY FACILITIES

The maintenance of abandoned Utility facilities within ADOT right-of-way shall be governed by laws, guidelines, and regulations adopted by regulatory agencies.

5.1.3. OWNERSHIP

The Utility facility owner shall continue to own, map, locate and mark its abandoned facilities in accordance with the requirements of Arizona Revised Statutes *A.R.S Sections 40-360.21 through 40-360.32* and by standards adopted by industry organizations.

5.1.4. LEGAL RESPONSIBILITY

Nothing contained in this guideline shall alter the legal responsibility for compliance with laws regulating construction and installation of Utility facilities within ADOT right-of-way and adherence to environmental laws or regulations.

5.1.5. STATE LIABILITY

The State assumes no liability for conflicts with utility facilities which are allowed to be abandoned within its right-of-way unless prior rights exist.

5.1.6. COORDINATE FOR DESIGNING INSTALLATIONS

The Utility facility owner and ADOT shall coordinate for designing installations of new facilities in a manner that minimizes the need to abandon the facility in the future.

5.2. ABANDONED UTILITIES

5.2.1. PERMITTED ABANDONMENT

ADOT will allow underground facilities operators to abandon facilities within its right of way provided that the abandoned facility maintains a separation distance of a minimum of five feet horizontal and two feet vertical between the abandoned facility and any new or proposed highway feature or as defined under the definition of the zone of disruption.

Underground facility operators shall remove conflicting portions of their abandoned facilities not maintaining a separation distance of at least five feet horizontal and two feet vertical for projects in the State Transportation Implementation Plan (STIP) or immediate or planned maintenance needs.

For the purpose of this guideline, “highway feature” means: ADOT owned and maintained structures.

For the purpose of this guideline, “zone of disruption” means: only those areas to be excavated to install highway features.

5.2.2. NOTICE TO ABANDON UTILITY FACILITIES

Upon planned abandonment of underground facilities, the utility shall provide notice to ADOT. Upon notification, ADOT will amend the existing permit to show the underground facilities as abandoned and send a copy of the amended permit to the utility operator. If there is no existing permit, ADOT will issue a permit to show the underground facilities as abandoned and send a copy of the permit to the utility operator.

5.2.3. AS-BUILT RECORDS

The Utility shall provide, upon ADOT request, as-built records for the location of facilities that are approved for abandonment.

5.2.4. REMOVAL OF ALL ABOVE-GROUND APPURTENANCES

The Utility shall remove all above-ground appurtenances to all facilities approved for abandonment. These appurtenances may include such items as, pads, foundations, vents, lift stations, cabinets, pole stubs, etc.

5.2.5. PURGING AND CAPPING

The Utility shall purge and cap or plug the ends of all facilities approved for abandonment and shall provide warning markers or any other warning devices as required by the appropriate regulatory agency. Slurry filling of the facility may be required. The means of terminating facilities not covered by a regulatory agency shall be coordinated with ADOT.

5.2.6. ABANDON COSTS

The Utility shall be responsible for all of the costs associated with the maintenance or removal of its abandoned facilities within highway right-of-way.

5.3. ABANDONED UTILITY FACILITIES

5.3.1. COORDINATE ACTIVITIES WITH ADOT

If the Utility owner decides to remove the abandoned Utility facility, it shall coordinate its activities with ADOT so as to not interfere with the ADOT construction project.

5.3.2. INCLUDE WORK IN ADOT'S CONSTRUCTION CONTRACT-

A Utility's request to include the work in ADOT's construction contract shall be made in sufficient time to allow any special conditions to be placed into the ADOT contract documents.

5.3.3. UTILITY WITHOUT PRIOR RIGHTS TO REIMBURSE ADOT

If the Utility facility has no prior rights, and elects to have the ADOT contractor remove the abandoned facilities under its contract, the Utility owner shall reimburse ADOT for all costs associated with the removal and disposal of the facility, including reasonable costs for construction oversight.