

Final Report

**FHWA/IN/JTRP-2004/22**

**EVALUATION, ANALYSIS, AND ENHANCEMENT OF INDOT'S UTILITY  
ACCOMMODATION POLICY**

by

Carlos A. Arboleda  
Hyung Seok Jeong  
Dulcy M. Abraham

School of Civil Engineering  
Purdue University

and

Sanjiv Gokhale  
Department of Civil and Environmental Engineering  
Vanderbilt University

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Purdue University  
West Lafayette, IN 47907  
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<p><b>16. Abstract</b></p> <p>The Utility Accommodation Policy (UAP) is a collection of the regulations and practices to control the utility occupancy of all public highway rights-of-way under jurisdiction of the different States. UAPs not only help to regulate the installation of new utilities and the renovation of the currently installed by construction companies, subcontractors, and utilities companies, but also provide a framework to develop and preserve a safe roadside and to minimize possible interferences and impairment to the highway, its structures, appearance, safe operation, construction and maintenance. According to FHWA (2002) "Present FHWA regulations, policies, and practices dealing with utility relocation and accommodation matters have evolved from basic principles established decades ago, with many of the policies remaining unchanged." It is therefore imperative to develop a utility accommodation policy that reflects the current needs of the industry.</p> <p>The current utility accommodation policy of the State of Indiana (policy) was adopted on September 10, 1990. It was revised on March 26, 1998 to include the placement of telecommunication towers within highway right-of-way of partial or full access control.</p> <p>In order to achieve an effective accommodation of existing and new utilities, INDOT's current Utility Accommodation Policy (UAP) was revisited and analyzed by comparing UAPs in mid-west states and incorporating experts opinions from INDOT and related industry. The advances in construction technologies such as trenchless technology and Subsurface Utility Engineering as well as the demands for new types of utilities, and issues related right-of-way, permits, appurtenances, emergency responses, etc. were analyzed and the implications of these were addressed in INDOT's new UAP.</p>					
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# CHAPTER 1

## INTRODUCTION

### 1.1 Background

Policies and practices developed by highway authorities and in accordance with state regulations govern “when and how utilities may use public highway right-of-way, and under what conditions public funds may be used to relocate utility facilities to accommodate highway construction. (FHWA 2002).” The current utility accommodation policy of the State of Indiana was adopted on September 10, 1990. It was revised on March 26, 1998 to include the placement of telecommunication towers within highway right-of-way of partial or full access control. INDOT personnel have been using the policy for several years to control the limited space under and above highway right-of-ways and, accordingly, to issue permits to preserve the integrity, operational safety, and functionality of the highway facilities. According to FHWA (2002) “Present FHWA regulations, policies, and practices dealing with utility relocation and accommodation matters have evolved from basic principles established decades ago, with many of the policies remaining unchanged.” It is therefore imperative to develop a utility accommodation policy that reflects the current needs of the industry.

Utility relocation has been found to be one of the primary sources of delays and added cost to road construction projects (Thomas 2002), and is of serious consideration by INDOT personnel. In order to achieve an effective accommodation of existing and new utilities, INDOT’s current Utility Accommodation Policy (UAP) was revisited and analyzed, as a means to enhance and update the policy. The focus of this project is on Section 10-03 of the INDOT Design Manual that describes the Utility Accommodation Policy (UAP).

Several challenges had to be addressed during the review of the existing UAP and the development of the new UAP.

- a) The existing policy did not reflect the advances in construction technologies as well as the demands for new types of utilities. The use of trenchless technologies for the installation of conduits has been growing at a rapid pace over the past two decades. Subsurface Utility Engineering (SUE) is also gaining popularity in locating the existing

underground utilities. In addition, increased internet and cell phone usage have led to dramatic increase in the need for fiber optic lines, cell towers and related communication facilities on highway right-of-way.

- b) The existing policy was written in general terms and lacks detail in important areas. It does not address specific details regarding location of utilities, i.e., how far from the right-of-way line, edge of pavement and side ditches should a utility be installed? A methodology for standardizing utility location within the right-of-way had to be identified in order to optimize space. A systematic approach for controlling identification posts and keeping them from causing right-of-way maintenance and aesthetic problems had to be included.
- c) Issues related to aesthetic considerations, erosion control, clear zone and obstacle free zones also needed more detailed consideration in the policy. In addition, an increasing number of abandoned facilities in recent years have had conflicts with new facilities being installed thereby impacting the completion of a project.
- d) Several different agencies or groups use INDOT's UAP. To help the different users better understand the policy, clarification regarding traffic control and the location of utility facilities, had to be addressed. Separate but compatible documents must be developed to provide the public (utility companies) and INDOT personnel with the necessary information required to utilize a consistent policy throughout the agency.

A further issue that needs consideration is the impact of the 1998 revision of FHWA's policy on utility accommodation. In the past, interstate rights-of-ways have not been available for private sector use, including the longitudinal installation of utility lines. Traditionally, the FHWA has carefully controlled longitudinal access to the right-of-way for non-transportation communication networks, and, as detailed in Indiana's UAP, access to the interstate rights-of-way is restricted to latitudinal crossings (Maudlin 2002). Indiana has explored projects to allow fiber optic cables to be installed along interstate right-of-ways, in shared-resources agreements. In such projects, there is "public-private partnering, private longitudinal access to public roadway right-of-way, installation of telecommunications hardware, and compensation granted

to the right-of-way owner over and above administrative costs (Apogee Research, Inc. 1996). INDOT along with FHWA and other partners are working on the preparation of a report on the "Obstacles to Implementing a Shared Resources Project".

A revised and enhanced policy has the potential to minimize the discrepancies among the different district offices of Indiana when issuing permits (which typically arise because specific issues are not addressed in the policy). This research project complements the aforementioned INDOT study.

## **1.2 Objectives**

The major research objectives were as follows:

(1) To identify key issues which must be addressed and studied in depth so that the current and future UAPs are more useful to INDOT and the public. Information for updating the policy was derived from literature reviews and intensive interviews with people involved in utility construction, relocation and permit activities.

(2) To evaluate INDOT's current UAP in the key areas by comparing with those of other states (especially, Midwest states including Illinois, Michigan, Kentucky, Tennessee, Ohio, Wisconsin, Minnesota.) which have similar characteristics in management of transportation systems.

(3) To determine the impact of new technologies (for installing utilities) on utility accommodation practices.

(4) To develop an advanced and up-to-date UAP for INDOT that settles all key issues, reduces redundant descriptions (that exist in the current policy) and provides a more effective way of communication.

## **1.3 Research Methodology Used**

### **Literature Review/Interviews**

For this study, a broad definition was applied to "utility." It included privately, publicly, or cooperatively owned line, facility, or system for producing, transmitting, or distributing communications, cable television, power, electricity, light, heat, gas, oil, crude products, water,

steam, waste water, storm water not connected with highway drainage, or any other similar commodity, including any fire or police signal system or street lighting system, which directly or indirectly serves the public. Discussions with current users of INDOT's existing utility accommodation policy, literature review and intensive interviews with people involved in utility construction, relocation and permit activities were utilized to identify shortcomings in the UAP.

### **Data Collection**

During the months of April and May 2003, questionnaires were distributed to 30 individuals from different utility companies located in the Midwest states. Many of these companies also have operations at the national level. The objective of this questionnaire was to assess the degree of knowledge and familiarity of these individuals with INDOT's current UAP. A Focus Group held on May 8, 2003 with individuals representing all the major utilities, consulting companies, INDOT, and FHWA, was utilized to obtain input regarding the major challenges/shortcomings in the current UAP. Details about the outcomes of the data collection from the survey and the focus group are described in Chapter 2. The questionnaire used for the survey is provided in Appendix A.

Data was collected from Departments of Transportations of other neighboring states such as Illinois, Michigan, Kentucky, Tennessee, Ohio, Wisconsin, and Minnesota, which have similar characteristics in management of transportation systems or which are known to have a superior utility accommodation policy. The comparison table of UAPs between these states is provided in Appendix B.

### **Development of New Utility Accommodation Policy for INDOT**

Guidelines to help standardize utility placement on highway right-of-way are helpful. However, there are many real-world conflicts and variables to dictate actual placement details. What are more desirable are tools to guide the process for deciding the location of the utility within the right-of-way and reasons for such placements, rather than standards that dictate specific locations. Based on results of the literature reviews, focus group meeting, and interviews with INDOT personnel, changes were suggested in the existing UAP to address the key issues stated.

The feasibility of implementing these revisions in the current UAP was considered by the Study Advisory Committee.

#### **1.4 Organization of the Report**

This report consists of four chapters. The second chapter of the report analyzes the responses to the questionnaire survey and the outcomes of the Focus group. Chapter 3 describes the new UAP (Section 10-3 of INDOT Design Manual). Chapter 4 summarizes the findings of this report and provides a table comparing the major changes between the old and the new versions of the UAP.

## **CHAPTER 2**

### **KEY ISSUES IN INDOT'S CURRENT UAP**

This chapter describes the major components of typical Utility Accommodation Policies. It addresses key issues in INDOT's current UAP by analyzing the results of a survey performed during the March - April 2003 time frame and a Focus Group meeting held on May 8, 2003, and by evaluating a synthesis study of UAPs from seven neighboring states.

#### **2.1 Introduction**

Transportation, communications and utility networks are growing in complexity. Such networks include highways, railways, and waterways at the surface; subways, pipelines, and cables below the ground; elevated utility ways, pole and tower lines above the ground; and airways space. As networks grow, the frequency for two or more networks of occupying a common Right-of-Way (ROW) or intersecting one another continues to increase. Problems arise as the construction, maintenance, and operation of one network may affect other networks (AASHTO 1994).

The Departments of Transportation (DOTs) have the responsibility to maintain the highway ROW under their jurisdiction and to preserve the operational safety, integrity, and functions of the highway facility. Across the country, this implies a reasonable uniformity in the engineering requirements that should be employed by highway agencies for regulating the use of highway ROW by utilities. Currently, given the large volumes of vehicular traffic and demands of an ever increasing population for essential utility services, it is required to carefully consider the effects of joint usage of highway ROW and develop written rules and regulations to govern the use and occupancy of highways ROW by public and private utilities.

#### **2.2 Utility Accommodation Policy**

A Utility Accommodation Policy (UAP) is defined as a collection of regulations and practices to control the utility occupancy of all public highways ROW under jurisdiction of the different States. UAPs not only help to regulate the installation of new utilities and the renovation of existing utilities by construction companies, subcontractors, and utilities companies, but also

provide a framework to develop and preserve a safe roadside and to minimize possible interferences and impairment to the highway, its structures, appearance, safe operation, construction and maintenance.

Every UAP has two major objectives. The first objective is to stipulate the policies and conditions for accommodating utility facilities within the ROW limits of the roads and streets within the State. The second objective is to provide public benefits consistent with the preservation of the integrity, safe usage, and visual qualities of the states highway system. These two objectives help to maintain the operational safety and function of the highway facility without compromising the accommodation of utility facilities. Typically, the UAP explains the procedures to be followed by the entities that participate in the design, construction and operation of the different utilities such as electric power, communications, cable television, water, gas, oil, slurry, petroleum products, steam, sanitary sewers, drainage, irrigation, and similar facilities that are to be located, adjusted, or relocated within the ROW of highways under the jurisdiction of highway agencies. Such utilities involve underground, surface, or overhead facilities, either singularly or in combination (AASHTO 1994).

According to the Federal Highway Administration (FHWA), “utility facilities, unlike most other fixed objects that may be present within the highway environment, are not owned nor are their operations directly controlled by State or local highway agencies. Because of this, highway authorities have developed policies and practices which govern when and how utilities may use public highway right-of-way, and under what conditions public funds may be used to relocate utility facilities to accommodate highway construction” (FHWA 2003).

The FHWA has an important role in defining the use of the ROW on Federal-aid and direct Federal projects. FHWA regulations require each State to develop its own UAP setting forth the manner in which the State will control the use of Federal-aid highway ROW by utility facilities. These regulations also include longitudinal utility use of freeway ROW. Once the State’s UAP is approved by the FHWA, any utility installations proposed to be installed on Federal-aid highway projects in accordance with the approved State’s UAP may be approved by the State without referral to the FHWA (FHWA 2003)

### 2.2.1 Components of the UAP

The UAP typically consists of the following sections: Scope and Application, Definition of Terms, General Utility Permits Conditions, Controls Governing Utility Installations, Aerial Utility Installations, and Utility Installations on Highway Bridges.

- a) Scope and Application. In this section, the UAP defines the rules and regulations to be applied in the design, installation, adjusting, accommodating and maintaining of the utilities within the ROW. The types of utilities included in the UAP are listed and the different types of roads (i.e., highways, local roads, streets) over which the UAP has jurisdiction are described. This section also clarifies the legal authority and the possible exceptions to the rules/regulations stated in the UAP.
  
- b) Definition of Terms. In order to establish an appropriate terminology, the UAP usually explains the most important terms included in it. According to the American Association of State Highway and Transportation Officials (AASHTO 1994), “The terminology used in utility guidelines and policies should depart as little as practical from conventional usage. However, there is a need for some terms having restricted or special meaning”. Some common terms are: Average Daily Traffic, Bedding, Casing, Control of Access (Limited or Full), Right of Way, Utilities, Use and Occupancy Agreement. In addition, the most important abbreviations are explained in this section of the UAP. These abbreviations include the different Federal entities participating in the UAP (for instance FHWA). A list of other codes that can be used as a reference during the design and/or installation of the utilities (i.e., National Electrical Safety Code, American National Standards, AASHTO Roadside Design Guide, etc.) is often included in this section.
  
- c) General Utility Permits Conditions. The UAP describes the process to obtain the permits to occupy public ROW under control by the DOT. These permits will ensure compliance with the standards, policies and methods promulgated by the DOT and will make possible the safe control of traffic movement, safety and coordination of work with other utilities in addition to highway maintenance and construction work. Usually, the procedures to obtain the permits are divided into two categories:

- *Utility Initiated.* When a utility company wants to install new facilities or adjust existing facilities within highway ROW, it is the responsibility of the utility to obtain a permit through the appropriate DOT office. Normally, a fee is charged for the permit.
- *Highway Initiated.* When a utility must be relocated or adjusted to accommodate proposed highway construction, reconstruction or maintenance, the utility company must coordinate relocations with and obtain relocation permits from the DOT. Usually, no fee is charged for these permits.

In some states, the application for permits must be accompanied by a surety bond that includes the DOT as an additional named insured guaranteeing that the proposed work will comply with the terms of the permit and that the applicant will reimburse any injured party for damages relating to the permitted work. Additionally, in some States an Emergency Contingency Plan is required with the permit application. This plan specifies the nature of potential emergencies and the intended response by the applicant.

- d) Controls Governing Utility Installations. This part of the UAP describes the requirements underlying the installation of utilities. Some general requirements are:
- *Control of traffic.* The utility company is responsible for providing and installing warning signs, protective devices and if required flagging for control of traffic.
  - *Working areas.* Areas disturbed by utility installations, relocations or removals shall be kept to a minimum.
  - *Construction operations.* The UAP states that no excavated material or equipment shall be placed on the pavement or shoulders of the highway.
  - *Cleanup and restoration.* The UAP requires that the ROW shall be returned to a condition which is at least as good as it was before the permitted work took place, in a timely manner. This includes the restoration of entrances and side roads.

- e) Underground/Above-ground Utility Installations. In this section of the UAP the construction requirements are described. Usually, gas transmissions lines, petroleum products pipelines, waterlines, and sewer and drainage lines are underground. Power and communications lines can be installed underground or above-ground. The UAP explains the location of the utility, crossings of fully or partially fully controlled highways, materials, minimum cover, technologies, overhead crossings, and encasement specifications (if required).
- f) Utility Installations on Highway Bridges. When engineering and economic studies substantiate that all other means of accommodating the utility are not practical, the DOT approves the accommodation of utilities on bridges. This alternative requires that the utility provides supporting data in their request that indicates the impracticality of alternate routing.

### **2.3 Assessing Major Issues In Current UAPs**

An initial step in this research project was the use of a Focus Group (held on May 8, 2003 at IGCN Room N925 (Indiana government building), 100 N. Senate Ave, Indianapolis, IN) to obtain input regarding the major issues in the current UAP from individuals representing all the major utilities. The participants in the focus group included: personnel from INDOT, representatives from major utility companies in the Midwest, and consulting engineers.

During March - April 2003, questionnaires were distributed to 30 individuals from different utility companies located in the Midwest. Many of these companies also have operations at the national level. The objective of this questionnaire (see Appendix A) was to assess the degree of knowledge and familiarity of these individuals with INDOT's current UAP. The response rate was 43%. The major findings from the questionnaire are as follows:

- 80% of the respondents worked for utility companies involved in design activities.
- 40% of the companies have sales over 100 U\$ million per year
- The area of expertise of the individuals included: telecommunications (23%); electric (18%); cable TV (12%)

- Since 1998, 90% of the companies have had at least 6 projects with INDOT
- Currently, 90% of these companies are working with INDOT on at least one project
- 50% of the respondents are familiar with INDOT's current UAP
- 90% of the respondents use the UAP 25% of the time or less
- 30% of the respondents consider the current UAP to be comprehensive and 70% felt that the process to obtain a permit is effective.
- 30% of the respondents consider the current utility relocation process to be adequate.

It is important to note that even though many of these companies have been involved in utility projects with INDOT since 1998, the respondents used the current UAP only 25% of the times. The survey questionnaire asked for comments/suggestions regarding the current UAP. These comments represent opportunities for improvement and also represent challenges for the DOT and the parties involved in the construction process. The major issues identified by the Focus Group are presented in Table 1.

The issues identified in the Focus Group provided one basis to evaluate INDOT's current UAP. They are summarized in Table 1. Most participants were of the opinion that the new UAP should address the reimbursable costs and the billing procedures since the reimbursable costs of the utility related works and the procedures are not clearly described in current UAP. Some participants requested that the new UAP should clarify which part supersedes when differences are encountered between codes such as the National Electrical Safety Code, construction codes and the UAP. Differences in applying utility accommodation procedures between districts were also pointed out by the participants. There is a need to have standardized administrative procedures which can be uniformly applied in the entire districts.

The current definitions of terms were determined to be inadequate. So, the new UAP must include definitions of terms such as *securing the ROW* and *construction limits*. Those in attendance suggested including a discussion of trenchless technologies and Subsurface Utility Engineering (SUE) in the revised UAP since the current policy lacks identification of innovative underground technologies. It was also pointed out that posting the UAP and the forms on a web site will enhance the use of the UAP. The other issues identified by the focus group include

interaction between the utilities throughout the different stages of the project, early coordination between INDOT and designers, and procedure for relocation.

Table 2.1. Issues Identified by the Focus Group

No.	Issue	Description
1	<b>Cost Reimbursement</b>	Some states reimburse the cost of the work. It was suggested that the revised UAP should address both reimbursable costs and the billing procedure.
2	<b>Limited access highways</b>	The UAP must address the procedure to be followed when encountering limited access highways.
3	<b>Conflicts between the UAP and Codes</b>	The UAP should clarify which part supersedes when differences are encountered between codes such as the National Electrical Safety Code, construction codes and the UAP.
4	<b>Differences between districts</b>	There should be a method to standardize the administrative processes among INDOT districts, in an attempt to improve consistency among permitting practices in districts.
5	<b>Definitions</b>	The current UAP lacks some important definitions such as securing the ROW and construction limits.
6	<b>Novel technologies</b>	The current policy lacks identification of innovative underground technologies. Those in attendance suggested including a discussion of trenchless technologies and Subsurface Utility Engineering (SUE) in the revised UAP.
7	<b>Impact of/to utilities</b>	The revised UAP should address the interaction between the utilities throughout the different stages of the project because several utilities could propose the use of the same space for their installations. Participants suggested that INDOT's inspectors should have authority to approve changes on site
8	<b>Use of the Internet</b>	Posting the UAP and the forms on a web site to obtain the required permits will enhance the use of the UAP.
9	<b>Early coordination between INDOT and designers</b>	The guidelines of coordination in the project between various utilities especially during the design phase should be improved.
10	<b>Procedure for relocation</b>	It would be beneficial to incorporate a procedure that discusses the relocation within the ROW. It was suggested that as part of the relocation procedure, an illustrative figure depicting the ideal location of the utilities should be included in the UAP.

#### 2.4 Topics Not Addressed In The UAP

Conflicts between underground utilities and the alignment, grade, and drainage of new and expanding streets and highways are frequent in the United States. The environments of the urban and sub-urban underground are complex web of utility lines including electric, telephone, cable TV, fiber optics, traffic signals, natural gas, water, sanitary and storm sewers and there is a possibility for a road project to be in conflict with the existing utilities. This situation necessitates new requirements for the design process, better coordination between the different parties involved in the construction process (i.e., design team, utility company, owner, contractor and subcontractors) and the application of novel technologies to locate and identify existing utilities.

### **Subsurface Utility Engineering (SUE)**

The need for an early coordination program in a utility construction or relocation project was recognized as a key issue which has to be incorporated in the UAP. Lack of such a program has resulted in high costs of utility redesign, claims, project delays due to utility conflicts and accidents. In 2003, the American Society of Civil Engineers (ASCE) published a document for defining the quality of utility location and the attribute information that is placed on plans (ASCE 2003). This document addresses issues such as: a) how utility information can be obtained, b) what technologies are available to obtain that information, and c) how that information can be conveyed to the information users. Hence it should be referenced in every state UAP.

Subsurface Utility Engineering (SUE) which has emerged since 1980's is gaining rapid credibility to reduce problems arising during utility construction and relocation. Two different recent research projects by FHWA and INDOT revealed the benefits of SUE quantitatively. Lew (2000) reported that there was a savings of US\$4.62 for every US\$1.00 spent on SUE in 72 utility related construction projects. A survey of state DOTs indicated that SUE is an effective tool for reducing construction delays and costs in utility related projects (Jeong et al. 2003a). These benefits are generated by substantially positive increase in utility coordination and fewer anticipated utility conflicts when SUE is used.

There are three issues that should be considered when addressing SUE in the UAP. First, a well organized description of the principal processes of SUE needs to be included to improve the

understanding of SUE and to guide the appropriate use of SUE since many parties involved in utilities still do not have in-depth knowledge about SUE. Second, the appropriate use of various geophysical technologies is critical for correct identification for underground utilities. UAPs should address the guidelines for the selection of appropriate technology given the site conditions to improve the quality of the utility location data. The qualification guidelines for selecting professional SUE providers may also need to be incorporated in the UAP since there have been some disappointing results from the use of SUE due to weak performance standards by inexperienced firms in the SUE industry (Jeong et al. 2003).

### **One-Call System**

The One-Call system is primarily designed to prevent underground utility damages during excavation activities by requiring underground utility owners to mark the location of known active facilities on the ground surface prior to excavation. The UAP needs to address the benefits of the One-Call system and its major shortcomings as well as major process in order to take full advantage of the One-Call system and remove the potential conflicts between stakeholders due to its major limitations. The One-Call system has helped reduce accidents caused by underground utility hits. Major limitations include a relatively higher probability (compared to SUE) of failure in locating utilities of non-members, and incorrect location of existing utilities due to lack of time and insufficient information from the members. In the One-Call process, the operation time is short (typically less than 48 hours). The One-Call system relies on the information provided by the members of the One-Call network. This is one of the reasons that the Federal Highway Administration (FHWA) supports the use of SUE during project development (planning, preliminary engineering and design) and the use of One-Call system during construction, i.e., prior to any excavation (Scott 2001).

### **Trenchless Technologies**

One of the main purposes of UAP is to preserve a safe roadside and to minimize possible interferences and impairment to the highway. In underground utility construction, open-trench method is the most widely used method for installation of underground pipelines and conduits. However, open-cut construction has several drawbacks such as increased exposure of workers to unsafe conditions, surface disturbance, disruption to vehicular/pedestrian traffic and reduction of

pavement life (Iseley and Gokhale 1997). Addressing the widely acknowledged benefits of trenchless technologies in the UAPs will help to accomplish safety and to reduce levels of disruptions in utility construction, since trenchless technologies require minimum trenching during construction. (Abraham et al. 2002). Another issue which can be incorporated in the UAP is the assessment of the applicability of different technologies on a project since, trenchless technologies comprise an array of different methods and techniques.

### **Traffic Safety during Construction/Maintenance Activities**

Traffic accidents in highway work zones are a continuing problem. In the year 2002, 84 fatalities occurred in highway and street construction (BLS 2003). The safe and efficient flow of traffic through work zones is a major concern for transportation officials, industry, the public, businesses, and commercial motor carriers (FHWA 2003). The UAP should define the responsibilities and controls of the utility company while construction and maintenance of utility facilities is in progress. In addition, the utility should be responsible for the development and design of a Traffic Maintenance Plan anytime its activity has the potential to affect the movement of traffic or traffic safety. This requires the installation of warning signs, speed control devices, flaggers, and any other safety procedure in order to protect the construction workers and the drivers during utility work along or in the highway during daytime and/or nighttime operations.

### **Fiber Optic Installation on Freeway ROWs**

Fiber optic technology provides exciting opportunities for the development of Intelligent Transportation Systems (ITS) through telecommunication networks and integrated communications systems, improving the operation of freeways and enhancing the safety and mobility of the traveling public (FHWA 2002). ITS can improve the quality, safety, and effective capacity of the existing infrastructure, but requires a change in transportation culture from primarily construction and rehabilitation of infrastructure, to active management of the transportation system to assure smooth operation and maximum safety. ITS technologies require significant telecommunication infrastructure to support the use of cameras and other devices within the freeway system. Hence, it is necessary to address the longitudinal installation of fiber

optic cable within the freeway ROW. This important issue has not been addressed in INDOT's current UAP.

## **2.5. Comparison between INDOT UAP and the UAPs of the Neighboring States**

INDOT's existing UAP was compared with those of other states which have similar characteristics in management of transportation systems or which are known to have an updated UAP. The UAPs of seven states, namely Michigan, Kentucky, Ohio, Illinois, Minnesota, Wisconsin, and Tennessee, were analyzed. In general, the UAPs from these states are very similar in the scope, application and objectives to the INDOT UAP. The UAPs of all these states require permits to commence utility work in the ROW and clearly define the procedures to obtain the permits. When the application of novel technologies is considered, only two UAPs have specific requirements regarding the use of trenchless technologies (Wisconsin and Tennessee), one of them (Wisconsin) mentions Subsurface Utility Engineering (SUE), and just one considered the One-Call service (Wisconsin) prior to start the utility installation. Appendix A-1 shows a synthesis of UAPs from seven different states and Indiana. The SAC members decided which polices were to be included in the new UAP, after in-depth discussions of the issues described in Sections 2.3, 2.4 and 2.5.

## **CHAPTER 3**

### **NEW UTILITY ACCOMMODATION POLICY**

The new Utility Accommodation Policy is provided in this chapter. The Utility Accommodation Policy is part of INDOT design manual, and is found in subsection of 10-3.0 - Utility Accommodation Policy. The changes (from the original UAP) have been underlined.

### **10-3.0 UTILITY ACCOMMODATION POLICY**

#### **1.0 10-3.01 Introduction**

##### **10-3.01(01) Purpose**

The policies and principles in this section are used to control the utility occupancy of all public highway rights-of-way, including easements, under the jurisdiction of the Indiana Department of Transportation (INDOT). This includes local public agency projects which use Federal funds administered by INDOT.

INDOT has the responsibility to maintain highway right-of-way under its jurisdiction as necessary to preserve the integrity, operational safety and function of the highway facility. Because the manner in which utilities cross or otherwise occupy highway right-of-way can materially affect the appearance, safe operation and maintenance of the highway, it is necessary that this use and occupancy be authorized and reasonably regulated.

These policies are provided to develop and preserve a safe roadside and to minimize possible interference and impairment to the highway, its structures, appearance, safe operation, construction and maintenance.

##### **10-3.01(02) Application**

This policy applies to all public and private utilities including electric power, telephone, telegraph, cable television, water, gas, oil, petroleum products, steam, chemicals, sewage, drainage, irrigation and similar lines that will be located, adjusted or relocated within the rights-

of-way of highways under the jurisdiction of INDOT. These utilities may involve underground, surface or overhead facilities, either singularly or in combination.

### **10-3.01(03) Scope**

This policy is provided by INDOT for use in regulating the location, design and methods for installing, adjusting, accommodating and maintaining utilities on highway right-of-way. It is limited to matters which are the responsibility of highway authorities for preserving the integrity of the highway and its safe operation.

Where laws or orders of public authority (such as the Indiana Utility Regulatory Commission, the Indiana State Board of Health or the requirements of the Federal Natural Gas Pipeline Safety Act of 1968), industry or governmental codes prescribe a higher degree of protection or standards than those described herein, then the higher degree shall prevail.

### **10-3.01(04) Other Requirements**

All utility installations and construction must comply with the requirements contained herein, the INDOT Standard [Specifications](#), [INDOT Supplemental Specifications](#), [INDOT Standard drawings](#), the *Indiana Manual on Uniform Traffic Control Devices*, and [the clear zone requirements in Chapter Forty-Nine \(Roadside Safety/Clear Zone\) of INDOT Design Manual. A traffic control plan will be included with each permit request or reimbursement agreement in accordance with INDOT Design Manual Chapter Eighty-Two \(Traffic Control Plan\).](#)

### **10-3.01(05) Exceptions**

Throughout this policy, there are several instances where the phrase “exceptions may be permitted in accordance with Section 10-3.01(05)” is used. These denote where INDOT tends to receive the most requests for exceptions to this Policy. However, exceptions to not only these provisions, but any provision contained in this section may be authorized by the Chief Engineer of INDOT, or his/her designee, where it is demonstrated that extreme hardship or unusual conditions provide justification and where alternative measures can be prescribed to fulfill the intent of this policy. All requests for exceptions must include an evaluation of the direct and indirect design, environmental and economic effects, including impacts on agricultural lands,

which would result if the installation is permitted and a comparison to the results if it is not permitted, plus any other pertinent information.

### **10-3.01(06) Prior Instructions**

This policy supersedes and replaces all policies or portions of policies pertaining to the accommodation, location and methods of utility installations, adjustments and maintenance which are in conflict.

The policy is not intended to serve as the basis for determining financial responsibility for replacing or adjusting facilities. Information regarding reimbursement of utility relocations and adjustments can be found in Federal Highway Administration Program guide: Utility Relocation and Accommodation on Federal-Aid Highway Projects. This statement of policy and procedure will not be interpreted or applied in a manner in violation of, or inconsistent with state law. The INDOT authority with respect to the State highway right-of-way and its facilities emanates from the State law.

## **2.0 10-3.02 Definitions**

The following definitions apply to utility accommodation.

1. ANSI. American National Standards Institute.
2. Applicant. A person or entity applying for a permit under this Part.
3. Backfill. Replacement of excavation with suitable material per CMS, compacted as specified around and over a pipe, conduit, casing, or gallery.
4. Bedding. Organization of soil or other suitable material to support an underground facility.
5. Boring. The procedure of making a hole below the ground by drilling.
6. Cap. Rigid structural element surmounting a pipe, conduit, casing, or gallery.
7. Carrier (pipe). Pipe directly enclosing a transmitted fluid (liquid, gas or slurry).

8. Casing. A larger pipe enclosing a carrier.
9. CFR. The Code of Federal Regulations
10. Clear Zone. That portion of the roadside, within the highway right-of-way as established by the department (INDOT), free of non traversable hazards and fixed objects. The INDOT Design Manual should be used as a guide for establishing clear recovery areas for various types of highways and operating conditions.
11. Conventional Highway. State highway with minimum access control
12. Cover. Depth to top of facility below grade of roadway, ditch, or other surface.
13. Direct Burial. Installing a utility facility underground without encasement, by plowing or trenching.
14. District. Any one of the administrative subdivisions of INDOT.
15. FHWA – Federal Highway Administration
16. Highway, Street, or Road. A general term denoting a public way for purposes of vehicular travel, including the entire area within the right-of-way.
  - Arterial Highway. A general term denoting a highway primarily for through traffic, usually on a continuous route.
  - Bypass. An arterial highway that permits traffic to avoid part or all of an urban area.
  - Divided Highway. A highway with separated roadways for traffic in opposite directions.
  - Expressway. A divided arterial highway for through traffic with full or partial control of access at grade intersections and sometimes with interchanges at major intersections.
  - Freeway. A divided arterial highway with full control of access.
  - Frontage Road. A local street or road auxiliary to and located on the side of an arterial highway for service to abutting property and adjacent areas and for control of access.
  - High Volume Road. A road with Average Daily Traffic (ADT) greater than 750 vehicles
  - Low Volume Road. A road with Average Daily Traffic (ADT) lower than 750 vehicles

- Major Highway. An arterial highway with intersections at grade and direct access to abutting property, and on which geometric design and traffic control measures are used to expedite the safe movement of through traffic.
17. IMUTCD. Indiana Manual on Uniform Traffic Control Devices.
  18. INDOT. Indiana Department of Transportation
  19. Jacking. The procedure of installing pipe below the surface by the actual pushing of pipe or casing in an excavated hole. This is usually done with hydraulic cylinders (jacks), but can be done with mechanical jacks, air jacks, and other devices.
  20. Manhole. An opening in an underground system which workmen or others may enter for the purpose of making installations, inspections, repairs, connections, and tests.
  21. Median. The portion of a divided highway separating the traveled way for traffic in opposite directions.
  22. Occupancy. The presence of utility facilities on, over, or under highway right-of-way.
  23. Pavement Structure. The combination of the surface, base course, subbase and up to 24 inches (0.6 m) of stabilized subgrade material which supports the traffic load and distributes it to the roadbed. A maximum of 24 inches (0.6 m) of subgrade stabilization will be considered a part of the pavement structure.
  24. Permit. Formal authorization by INDOT to construct and maintain utility facilities on State highway right-of-way.
  25. Pipeline. A continuous carrier used primarily for the transportation of fluids (liquid or gas) from one point to another using either gravity or pressure flow.
  26. Plowing. Direct burial of utility lines by means of a “plow” type mechanism which breaks the ground, places the utility line, and closes the break in the ground in a single operation.
  27. Pressure. Relative internal pressure in psig (pounds per square inch gauge).( 1 psig = 6.895 kPa)

28. Private Lines (Private Utility Facilities). Privately owned facilities which convey or transmit the commodities as defined in the utility facility definition, but devoted exclusively to private use.
29. Restoration. The repair of an area or highway facility disrupted by the construction, maintenance or repair of a utility.
30. Roadside. A general term denoting the area adjoining the outer edge of the roadway. Extensive areas between the roadways of a divided highway may also be considered roadside.
31. Roadway. The portion of a highway, including shoulders, for vehicular use. A divided highway has two or more roadways.
32. Service Lines. All lines supplying utility services to individual consumers from a main line.
33. Shoulder. The portion of the roadway contiguous with the traveled way, outside of edge of pavement, for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.
34. Special Provision. Provision inserted into a permit revising these rules and regulations or supplements hereto, and covering conditions peculiar to the individual utility installation.
35. Specifications. Refers to the INDOT specifications.
36. Subsurface Utility Engineering (SUE). A practice of engineering that manages the risks associated with subsurface utilities via: utility mapping at appropriate quality levels, utility coordination, utility relocation design and coordination, utility condition assessment, communication of utility data to concerned parties, utility relocation cost estimates, implementation of utility accommodation policies, and utility design
37. Traffic Control Plan. A plan which describes the traffic control devices and other measures that will be installed to ensure the safe and expeditious movement of traffic around the worksite and the safety of the utility work force.
38. Traveled way (Travel lane). The portion of the roadway for the movement of vehicles exclusive of shoulders and auxiliary lanes.
39. Trenched. Installed in a narrow open excavation.

40. Trenchless Technology. A group of construction methods for underground utility and other line installation, replacement, renovation, inspection, location and leak detection, with minimum excavation from the ground surface.
41. Utility. This term applies to all publicly, privately or cooperatively owned lines and/or their accessories within the highway right-of-way except those used for highway-oriented needs. Such utilities may involve underground, surface or overhead facilities either singularly or in combination. The term utility, when capitalized, also includes the utility company, including any wholly owned or control subsidiary. Public utilities are generally considered those which convey a product, power or communication from the Utility to a customer. Private lines are generally considered those which are devoted exclusively to private use.
42. Utility Maintenance. Any use of a utility of labor or materials of repairs or replacement of parts of an existing utility facility to retain its use as intended, limited to the work types as further defined herein.
43. Vent. A pipe to allow the dissipation into the atmosphere of gases or vapors from an underground casing.

### **3.0 10-3.03 General**

#### **10-3.03(01) Permits**

Public utilities have a qualified right to occupy public right-of-way, subject to the control of INDOT or other agencies with jurisdiction of the right-of-way. This control is exercised by requiring a right-of-way permit for each point or area of use by a utility facility. This will ensure compliance with the standards, policies and methods promulgated by INDOT and will make possible the safe control of traffic movement, safety and coordination of work with other utilities and highway maintenance or construction work.

INDOT procedures divide processing utility occupancy requests into two categories as follows:

1. Utility Initiated. When a Utility wants to install, replace or adjust any facilities within highway right-of-way. The Utility must obtain a right-of-way permit through the

appropriate INDOT District or Sub-district office. A fee is [typically](#) charged for the permit.

2. Highway Initiated. When a Utility must be relocated or adjusted to accommodate proposed highway construction, reconstruction or maintenance. This work is coordinated by the INDOT Highway-Utility Unit or the appropriate INDOT district office.

Normally, all utility facilities within the existing and/or proposed right-of-way are identified while the highway project is in the design stage. All affected Utility companies receive plans of the proposed highway construction and are notified when relocation is necessary. The Utility must coordinate relocations with and obtain relocation permits from the Highway-Utility Unit or the appropriate District office. No fee is charged for these permits.

If the Utility does not complete its adjustments or relocations [in accordance with the INDOT approved work plan](#), INDOT may claim damages from the Utility for delay of highway work. In the event of delay, INDOT may also perform the necessary work itself or through a contractor and bill the Utility for all costs associated with this work.

The Utility must identify and obtain any other necessary permits or authorizations for the installation, which may be required from the U.S. Corps of Engineers, the Indiana Department of Natural Resources, railroads or others. INDOT may require the Utility to produce satisfactory evidence that these permits and authorizations have been obtained.

[A permit shall be granted unless INDOT makes any of the following findings: that an applicant has a history of not responding to INDOT requests, that there is no public need for the placement of the requested facility, the placement will unduly threaten the safety and convenience of highway users, or that the proposed installation is not in compliance with the Utility Accommodation Policy.](#)

[If the ownership of the Utility is changed, the Utility shall notify INDOT's District that issued the permit within ten days after the transfer of a permitted facility to another party. If the utility is sold, the new owner of the Utility shall have all the obligations and privileges enjoyed by the former owner. If the legal status of the Utility changes, the Utility is still bound by the permit.](#)

[Failure of the Utility to do any of the following constitutes grounds to revoke a permit issued under this policy:](#)

- 1) [comply fully with the terms of the permit, including the provisions set forth in this Part;](#)
- 2) [remove, relocate or modify its facilities in accordance with the INDOT approved work plan, when required to do so by INDOT for a highway project.](#)

INDOT may impose sanctions and conditions on a Utility which may include that the permit be revoked in part, and/or a surety bond be required.

Each permit applicant shall prepare an emergency contingency plan to address safety and unexpected conditions during the work described in the permit.

### **10-3.03(02) Driveway Conflicts**

Construction, reconstruction, modification or relocation of private drives on highway right-of-way may also require adjustment or relocation of utility facilities. Where the work on the drive is initiated by and/or incidental to a highway project, the adjustment or relocation of the utility will be treated like any other highway-initiated work.

Where the work on the drive is initiated by a private owner, subject to INDOT approval, INDOT is not responsible for identifying or resolving any conflicts between the drive and utilities. If a conflict exists and there is no other practical location for the drive, then the Utility must be adjusted or relocated. The division of costs, if any, for this work will be resolved between the Utility and the owner of the drive.

### **10-3.03(03) Private Lines**

Because private lines serve only the owner, it is generally not in the public interest for them to be located within highway right-of-way. Longitudinal installations of private lines are not permitted. Exceptions may be made in accordance with Section 10-3.01(05) where a public interest can be demonstrated. Crossings of highway right-of-way by private lines may be allowed subject to INDOT control. Private line designs (Chapter Forty-Nine of INDOT Design Manual), installations, operations and maintenances must conform to all other applicable requirements contained herein. The installation of private lines or conduits on the right-of-way for the purpose of draining wetlands is prohibited. A special agreement may be required in certain circumstances.

### **10-3.03(04) Service Lines**

Service lines are a special class of private lines. Whether the public utility facility is on or off highway right-of-way, the sole reason for a service line to be on highway right-of-way is to

facilitate its connection with a public utility. Because it is in the interest of both the customer and Utility to have these connections, service lines are permitted on highway right-of-way whenever practical.

There is a wide variation among Utility companies on the division of ownership, costs and responsibility between the Utility and customer for the portion of the service line on highway right-of-way. INDOT neither seeks nor desires to regulate this relationship. However, because the Utility clearly benefits from these service lines and, as a practical consequence of effectively regulating utility occupancy of highway right-of-way, the Utility must at a minimum co-sign any service line permit. Each Utility must determine the proper division of costs, if any, with each customer.

### **10-3.03(05) Access Control**

INDOT has the authority to control and regulate access to all highways under its jurisdiction. A large public investment has been made to construct and maintain a safe and efficient highway system. A major objective is to limit interference with vehicles or pedestrians which are entering, exiting or crossing the highway. Access control generally includes three categories as follows:

1. Non-Limited Access. INDOT has the authority to regulate the location and details of access which affect the safe operation of the highway, but INDOT has not purchased access control rights from adjoining properties. This level is typical of most highways with frequent driveways and intersections.
2. Partial Limited Access. INDOT has declared or purchased access control from adjoining properties. Access is controlled to give preference to through traffic, but there may still be some intersecting streets at grade and some driveway connections. This level is typical of many divided highways with some intersections and driveways.
3. Full Limited Access. INDOT has purchased access control rights from adjoining properties. Access is controlled to give priority to through traffic by providing access only from selected public roads, by prohibiting crossings at grade and by prohibiting driveway connections. This level is typical of Interstate highways and some divided highways.

The type of access control is not always apparent from visual inspection. The appropriate INDOT District should be contacted to confirm the type of control in effect for specific

locations. This determines the type and extent of utility installations which may be permitted. The access control line is the limit at which access is physically controlled for limited access right-of-way. The access control line is normally but not always the same location as the right-of-way line. INDOT will advise the utility if there are any exceptions.

[Access for servicing a utility along or across a limited access highway shall normally be restricted to private easements, frontage roads where provided, or nearby adjacent public roads.](#)

### **10-3.03(06) Location**

The following applies to the location of utilities.

1. Utility lines must be located to avoid or minimize the need for adjustment for future highway improvements and to permit access to the utility lines for their maintenance with minimum interference to highway traffic. Full consideration must be given to the measures necessary to preserve and protect the maintenance, operation, safety and aesthetic characteristics of the highway.
2. Utility installations on urban streets with closely abutting improvements are special cases which must be resolved consistent with the prevailing limitations and conditions.
3. Utilities should cross roadways at right angles or as nearly as practical to right angles. Reasonable latitude may be exercised for existing utilities which are otherwise qualified to remain in place.
4. For utility crossings on limited access highways, all supporting structures and above ground appurtenances should be located outside the access control line and, preferably, outside the right-of-way line. Installation and maintenance must be from non-limited access frontage roads, crossroads and streets whenever practical or otherwise from outside the access control line and, preferably, outside the right-of-way line of the through traffic roadway. Occasional exceptions may be allowed in accordance with Section 10-3.01(05) for an unusually wide right-of-way or median.
5. Longitudinal installations must be located on uniform alignment as near as practical to the right-of-way line to provide space for future highway construction and for possible future utility installations. Where irregularly shaped portions of the right-of-way extend beyond the normal right-of-way limits, variances in the location from the right-of-way

line may be allowed as necessary to maintain a reasonably uniform alignment for longitudinal utility installations. Longitudinal installations are not permitted in highway medians.

6. Longitudinal installations on highways with partial access control are generally discouraged. Occasional installations may be allowed in accordance with Section 10-3.01(05) and the following conditions:
  - a. Individual service connections will be permitted only when no other reasonable alternative exists. Factors to be considered include distance between distribution points, terrain, cost and prior existence.
  - b. Utility maintenance points, such as manholes, must be installed outside of the right-of-way whenever practical.
7. Longitudinal installations on highways with full access control are not permitted. Exceptions may be allowed in accordance with Section 10-3.01(05) and the following conditions:
  - a. Individual service connections must not be permitted.
  - b. The utility must not be installed or serviced by direct access from the limited access roadways or connecting ramps.
  - c. The utility must not interfere with or impair the safety, design, construction, operation, maintenance, stability or future expansion of the highway.
8. Wireless telecommunication towers may be permitted on highways with partial or full-access control in accordance with Section 10-3.06.
9. The horizontal location of above-ground utility lines within the highway right- of-way shall conform with the INDOT Design Manual (Chapter Forty Nine: Roadside Safety/Clear Zone Concept). New or relocated above-ground utility installations are to be located outside the clear zone. If this is not considered practical by the utility, they must demonstrate to INDOT that locating outside the clear zone is not technically feasible or is unreasonably costly and there are no feasible alternate locations. If this request is approved, motorists must be protected from the above-ground utility by countermeasures described in Chapter Forty-Nine of the INDOT Design Manual and approved by INDOT. The purpose is to provide drivers of errant vehicles which leave the traveled portion of

the roadway a reasonable opportunity to stop safely or otherwise regain control of the vehicle.

10. Utilities will not be permitted to occupy INDOT owned appurtenances or cross under State Highways through culverts or other drainage facilities.
11. Utilization of highways by utilities requires that the type and size of its facilities and the manner and extent of its installations shall not materially impair the scenic quality, appearance, or view of highway roadsides and adjacent areas. It should be in accordance with Federal Regulations 23 CFR, Part 645, Subpart B.
12. Service connections to adjacent properties should be discouraged from within the access control limits.
13. A warning device (trace wire, metallic tape, etc.) shall be placed at a minimum depth of 12 inches (0.3 m) below the existing ground surface and above the installed high risk utility lines (gas lines, petroleum lines, water lines, etc.) to help locate the facility in the future. Any non-metallic pipe, cable, or other kind of utility line which lacks a continuous and integral metallic component capable of detection by locating instruments shall be accompanied in its location by a continuous detectable metallic tracer wire or metallic tape.
14. Utility sign markers, if used, should be placed by the utility within the right-of-way fence lines. Signs shall identify the owner/operator name, One Call number and type of facility buried by the utility.
15. When a utility facility exists within the right-of-way of an existing or proposed highway, it may remain provided it does not adversely affect highway safety based on sound engineering judgment and economic considerations. The existing facility shall be relocated if it conflicts with any construction activities or it is located longitudinally under the pavement or shoulder for a reconstruction project, or it if conflicts with occupancy rules for limited access or adversely safety.
16. The use of subsurface utility engineering (SUE) to locate buried facilities is encouraged by INDOT. Approval from INDOT must be received prior to using any SUE procedures.

### **10-3.03(07) Design**

The following applies to the design of utilities.

1. The Utility must be responsible for the design of the utility facility to be installed within the highway right-of-way or attached to a highway structure. Full consideration must be provided to the measures necessary to preserve and protect the maintenance, operation, safety and aesthetic characteristics of the highway.
2. Utility installations on, over or under the highway right-of-way must, at a minimum, meet the following requirements.
  - a. Electric power and communication facilities must conform with the currently applicable National Electrical Safety Code.
  - b. Water lines must conform with the currently applicable specifications of the American Water Works Association.
  - c. Pressure pipelines must conform with the currently applicable sections of the ANSI Code for Pressure Piping (ANSI Code B31) ; 49 CFR Parts 192, 193 and 195; and any applicable industry codes.
  - d. Liquid petroleum pipelines must conform with the currently applicable recommended practice of the American Petroleum Institute for pipeline crossings under railroads and highways.
  - e. Any pipeline carrying hazardous materials must conform to the rules and regulations of the U. S. Department of Transportation governing the transportation of such materials.
3. All utility installations on, over or under highway right-of-way and attachments to highway structures should be of durable materials designed for a long service life expectancy and relatively free from routine servicing and maintenance.
4. On new installations or adjustments of existing utility lines, provisions should be made for known or planned expansion of the utility facilities, particularly those located underground or attached to bridges. They should be planned to minimize hazards and interference with highway traffic when additional overhead or underground lines are installed at some future date.
5. Utility lines which are attached to highway bridges and separation structures must have shut-off valves, automatic where practical, installed at or near the ends of the structure, unless segments of the lines can be isolated by other devices within a reasonable distance.

6. Underground crossings of all highways shall be made without disturbing existing pavements. Open cut of pavement will not be considered, unless it is demonstrated there is no reasonable alternate method available. Casing, pipe, or conduit crossings of the highway shall be installed by trenchless technologies without disturbing the pavement or paved shoulders. Water jetting will not be permitted.
7. Boring or jacking under State highways shall be accomplished from pits located a minimum of 30 ft (9 m) from the edge of pavements on partial and fully access-controlled highways and at a distance of 10 ft (3 m) plus the depth of the pit without shoring on conventional highways. Wet boring or jetting will not be permitted. On the interstate system, the pits shall be located outside the access control fence. Exceptions may be granted by INDOT when the utility can demonstrate that the above requirements cannot be achieved or are unreasonably costly.
8. All borings shall be accomplished with INDOT specifications (Section 716: Trenchless Pipe Installation) and following pipe and the diameter of the auger shall not exceed the outside diameter of the following pipe by more than one inch (0.02 m). Borings 6 inches (0.15 m) and under may be accomplished by either jacking, guided whip auger or auger with following pipe method. While pits are open, they shall be clearly marked and protected by barricades.
9. The right-of-way shall be returned to a condition which is at least as good as it was before the permitted work took place, in a timely manner. This includes restoration of entrances and side roads.
10. The Utility shall obtain authorization from INDOT to change the design presented in the original permit before proceeding to modify the installation of utilities. The Utility shall submit a set of revised drawings of approved location changes to INDOT's district. The Utility should maintain the as-built plans.
11. The trimming, cutting, spraying or removal of trees and shrubs or other vegetation located within the highway right-of-way shall either be permitted or denied in accordance with the current regulations established by INDOT specifications (Section 200 Earthwork)
12. Utility tunnels shall be designed so that most repairs or replacement of sections of pipe line can be made without resorting to pulling the entire pipe line. The utility tunnel design shall include one or more entrance shafts of a size suitable for removal of one pipe

section from the gallery. When used, utility tunnels shall extend across the full width of the right-of-way.

13. INDOT reserves the right to require installations to be placed in a multi-duct system consisting of two or more inner ducts. The installation details are subject to the approval of INDOT. INDOT may designate the first utility company requesting occupancy as the "lead utility". This company shall be responsible for the design and construction of the multi-duct system.
14. Light poles shall be of single pole construction located as near as practicable to the right-of-way line and, where possible, in protected areas. No light poles will be permitted in the ditch line of any State highway. Light poles in the clear zone shall be breakaway design unless there are sidewalks and the potential for breakaway poles falling on the pedestrians.
15. Only light poles, power lines and communication lines facilities and appurtenances to underground facilities such as regulator vault gauge boxes, highway crossing casing vents, service and system pressure regulator installations and pipeline markers will be allowed above-ground on State highways.

## **4.0**

### **5.0 10-3.04 Structures**

#### **10-3.04(01) Utility Structures**

Where it would be more economical to carry one or several utility lines across a highway in a tunnel or on a bridge rather than in separately trenched and encased crossings, consideration should be given to using a separate structure specifically for the utility crossing. Such a structure may serve a joint purpose as a utility and pedestrian facility.

The utility companies must agree that any maintenance, servicing or repair of the utility lines will be their responsibility. Further, the cost of designing, constructing and maintaining the utility tunnel or bridge must be divided among the Utilities in an agreed, equitable manner. INDOT will participate in these costs only to the extent that the utility would otherwise normally

be reimbursable for such work or to the extent that the structure is also used for highway purposes.

[This policy applies equally to all bridges, both proposed and existing.](#)

### **10-3.04(02) Highway Structures**

The following applies to the attachment of utilities to highway structures.

1. The attachment of utility lines to highway bridges and separation structures is discouraged. Such attachments can materially affect the durability and load capacity of the structure, the safe operation of traffic, the ease of maintenance and the overall appearance.
2. Exceptions may be permitted in accordance with Section 10-3.01(05) and the following criteria. Each attachment will be considered individually and must not be considered a precedent for granting of any subsequent requests for attachment.
  - a. **Communication Lines.** Where it is impractical to carry a communication line across a stream or other obstruction, INDOT may permit attachment of the line to its bridges. On existing bridges these lines must generally be carried in conduits and located so as not to interfere with stream flow, traffic or routine maintenance operations. When a request is made prior to construction of a bridge, suitable conduits may be provided in the structure if the Utility bears the cost of all additional [design and construction, and has met all other applicable requirements](#)
  - b. **Gas and Petroleum Lines.** Lines carrying these and other hazardous, explosive or highly pressurized or heated materials must not be attached to structures except in cases of extreme hardship. In no case will they be installed where they can be impacted by traffic on or under the bridge or where a leak could flood a roadway on or under the bridge.
  - c. **Power Lines.** High voltage power lines must not be attached to structures except in cases of extreme hardship. Low voltage may be attached where the cost of other solutions is prohibitive. In no case will power lines be installed where they can be impacted by traffic on or under the bridge.

- d. Water and Sewer Lines. These lines must not be installed where they can be impacted by traffic on or under the bridge nor where a leak could flood a roadway on or under the bridge.
  - e. Structural Analysis. All requests to attach pipelines to an existing bridge must be accompanied by sufficient information [including design details and calculations certified by a professional engineer](#) to determine the effect of the added load on the structure. If the bridge does not have sufficient strength to carry the loads with an adequate margin of safety, the request will be denied. Where the request is to attach lines within or to a new structure, the Utility will be responsible for any increase in the cost of the structure to support the extra loads of the pipeline, including any increase in the size or thickness of members necessary to contain lines or conduits installed within the structure.
  - f. Attachment Details. All requests for attachments must be accompanied by sufficient details of the manner and type of attachment to allow for adequate review and approval by INDOT.
  - g. Asbestos Materials. Materials [containing](#) asbestos shall not be used on any utility lines attached to a highway structure.
3. Any time that an attachment must be relocated to accommodate highway work or safety, the Utility must apply for a new attachment. Prior existence will not be a basis for reattachment.

## **6.0 10-3.05 Pipelines**

### **10-3.05(01) General**

The following applies:

1. Methods of Protection. The following applies.
  - a. General. All pipelines must provide sufficient strength to withstand internal design pressures and must be of satisfactory durability under the conditions to which they may be subjected and must meet any other applicable codes or industry standards for the type of pipeline and material being transmitted.

- b. Non-Encased. Non-encased pipelines must provide sufficient strength to withstand internal design pressures and the superimposed loads of the roadway and traffic, including that of construction equipment. Non-encased highway crossings must comply with the requirements herein for each type of utility.
- c. Encased. Encasement must consist of a pipe or other separate structure around and outside the carrier line and should be designed to support the superimposed loads of the roadway, traffic and construction equipment. Casing strength must meet or exceed the structural requirements for drainage culverts. Casing materials must be of satisfactory durability under the conditions to which they may be subjected. Highway crossings must generally be encased in the interest of safety, protection of the highway and utility, and access to the utility.

Where casing is used, it must be provided under center medians, from top of backslope to top of backslope for cut sections, 5 ft (1.5 m) beyond the toe of slope under fill sections, 5 ft (1.5 m) beyond face of curb in urban sections and 5 ft (1.5 m) beyond any structure which the line passes under or through. Encasement may be omitted under medians which are substantially wider than normal standards for such roadway, [such as when the roadways are on independent alignments](#).

- 2. Manholes, Vaults and Pits. This type of access, [if it is required](#), must be limited to those necessary for installation and maintenance of underground lines. They must generally be directly in line with the utility facility and of the minimum width and length to accomplish their intended function and comply with any other necessary codes or requirements. They must generally not be placed or permitted to remain in place in the pavement or shoulders of any high-volume roadway. Exceptions in accordance with Section 10-3.01(05) may be permitted for roadways in urban areas in cases of extreme hardship. They may also be placed or permitted to remain in place under traffic lanes of low-volume roadways in urban areas provided steps are taken to minimize these installations and to avoid their location at intersections as practical. They must be installed flush with the roadway or ground surface and must be of sufficient strength to withstand the superimposed loads of the roadway, traffic and construction equipment. [If they should be placed in the roadway, they must be installed outside the normal wheel path. Concrete collars must be placed around manholes in the pavement. These will reduce settlement of the pavement around the manhole and make it easier to mill around them.](#)
- 3. Depth. As used herein, depth of cover must be to the top of the pipe if non-encased or otherwise to the top of the casing. The depth of underground lines must be as specified herein for each type of utility. Where placements at these depths are impractical or where

unusual conditions exist, exceptions to permit other types of protection may be approved as appropriate.

4. Methods of Installation. Underground lines to be installed across any existing roadway must be installed by [trenchless technologies](#) in accordance with INDOT specifications ([Section 716: Trenchless Pipe Installation](#)). When installed by jacking or boring, encasement may be required. Bore pits should generally be located as required in Section 10-3.03(07) Item No. 7. Adequate warning devices, barricades and protective devices [must be used in accordance with the approved Traffic Control Plan](#). Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, concrete barrier rail or other approved devices must be installed for protection of traffic in accordance with [INDOT Design Manual \(Part Eight: Workzone Traffic Control\)](#), [INDOT Specifications and the approved Traffic Control Plan](#). Bore pits must be located and constructed to not interfere with highway structural footings. Shoring must be used if necessary.
  
5. Locations. Unsuitable or undesirable locations must be avoided. These include locations as follows:
  - a. deep highway cut sections;
  - b. near footings of bridges or other highway structures;
  - c. diagonally across intersections
  - d. at cross-drains where flow of water, drift or stream bedload may be obstructed;
  - [e. longitudinally along the ditch;](#)
  - f. within basins or an underpass drained by a pump if the pipeline carries a liquid or liquefied gas;
  - g. in wet or rocky terrain where minimum depth of cover would be difficult to attain; and
  - [h. soft soils subject to excess settlement.](#)
  
6. Clearances. Vertical and horizontal clearances between a pipeline and a structure or other highway or utility facility should be sufficient to permit maintenance of the pipeline and the other facilities.

7. Materials. All pipelines and casings must provide sufficient strength to withstand the internal design pressure and the dead and live loads of the backfill, pavement structure and traffic, including construction equipment.

### **10-3.05(02) High-Pressure Gas and Liquid Petroleum Lines**

The following applies.

1. Depth of Cover. All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of [36 inches \(0.9 m\) for encased lines and 36 inches \(0.9 m\) for non-encased lines](#).

All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of [48 inches \(1.2 m\) for encased and non-encased lines](#). Further, all lines must be a minimum of [24 inches \(0.6 m\)](#) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

All lines must have a minimum depth of cover of 4 ft (1.2 m) under ditches.

Exceptions may be authorized for existing lines to remain in place with a reduction of 6 inches (0.15 m) in the depths of cover specified above. Further reductions may be permitted if the pipeline is protected by a reinforced concrete slab which meets the following requirements:

- a. Width. Three times the pipe diameter but not less than 4 ft (1.2 m).
  - b. Thickness. Minimum of 6 inches (0.15 m).
  - c. Reinforcing. Minimum of [No. 4 \(13M\) epoxy coated](#) bars on 12 inches (0.3 m) centers, or equivalent.
  - d. Cover. Minimum of 6 inches (0.15 m) between the slab and top of pipe.
2. Crossings. These may be encased or non-encased. However, only welded steel lines with adequate corrosion protection may be used for non-encased highway crossings.
  3. Vents. One or more vents must be provided for each casing or series of casings. For casings longer than 150 ft (45 m), vents should be provided at both ends. On shorter casings, a vent should be located at the high end with a marker placed at the low end. Vents must be placed at the right-of-way line immediately above the pipeline and situated

to not interfere with highway maintenance and to not be concealed by vegetation. Ownership of the lines must be shown on the vents.

4. Markers. The Utility must place a readily identifiable and suitable marker immediately above any high-pressure gas or liquid petroleum line where it crosses the right-of-way line, except where marked by a vent.

### **10-3.05(03) Low-Pressure Gas**

The following applies.

1. Depth of Cover. All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of 36 inches (0.9 m) for encased lines and 36 inches (0.9 m) for non-encased lines.

All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 48 inches (1.2 m) for encased and non-encased lines. Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

All lines must have a minimum depth of cover of 4 ft (1.2 m) under ditches.

Exceptions may be authorized for existing lines to remain in place with a reduction of 6 inches (0.15 m) in depths of the cover specified above.

2. Crossings. These may be encased or non-encased. Non-encased crossings must be welded steel construction with adequate corrosion protection or plastic lines with no joints under or within 5 ft (1.5 m) of the roadway. A minimum depth of cover is 48 inches (1.2 m) from the surface.
3. Vents. One or more vents must be provided for each casing or series of casings. For casings longer than 150 ft (45 m), vents should be provided at both ends. On shorter casings, a vent should be located at the high end with a marker placed at the low end. Vents must be placed at the right-of-way line immediately above the pipeline and situated to not interfere with highway maintenance and to not be concealed by vegetation. Ownership of lines must be shown on the vents.

4. Markers. The Utility must place a readily identifiable and suitable marker immediately above any low-pressure gas line where it crosses the right-of-way line, except where marked by a vent.
5. Plastic Lines. The size of the plastic lines shall conform to industry standards. Where plastic pipe is installed without a metallic casing, a metal wire must be installed concurrently or other means provided for detection purposes. [This excludes service lines 2 inches \(0.05 m\) or lower in diameter.](#)
6. Location Exceptions. In urban areas, existing longitudinal lines which can be maintained without violating access control and which are not under the pavement or shoulder of any existing roadway or potential future improvements may remain in place provided that all other requirements are met and provided that measures are taken to minimize any future need for cutting the pavement to make service connections on any high-traffic roadway.

### **10-3.05(04) Water Lines**

The following applies.

1. Depth of Cover. All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of [36 inches \(0.9 m\)](#)

All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 4 ft (1.2 m). Further, all lines must be a minimum of [24 inches \(0.6 m\)](#) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

All lines must have a minimum depth of cover of [48 inches \(1.2 m\)](#) under ditches.

Exceptions may be authorized for existing lines to remain in place with a reduction of 6 inches (0.15 m) in the depths of cover specified above.

2. Crossings. All crossings [under the roadway and within 5 ft \(1.5 m\) of the roadway](#) must be encased, except service lines of 2 inches (0.05 m) diameter or less. Encasement under entrances may be omitted in consideration of the type and amount of traffic and the depth, condition and maintenance responsibility.

3. Plastic Lines. Where plastic pipe is installed without a metal casing, a metal wire must be installed concurrently or other means provided for detection purposes. [This excludes service lines 2 inches \(0.05 m\) or lower in diameter.](#)
4. Location Exceptions. In urban areas, existing longitudinal lines which can be maintained without violating access control and which are not under the pavement or shoulder of any existing roadway or potential future improvements may remain in place provided that all other requirements are met and provided that measures are taken to minimize any future need for cutting the pavement to make service connections on any high-traffic roadway.
5. Appurtenances. Meter pits, sprinkler pits, regulator pits and other such features must not be located within highway right-of-way. Exceptions may be allowed for existing facilities if they do not interfere with proposed highway construction, maintenance, operation or safety.
6. Drains. One or more drains must be provided for each casing or series of casings. The drains should outlet outside of the roadway area to a natural drainage feature or roadway ditch.
7. Markers. The Utility must place a readily identifiable and suitable marker immediately above any water line where it crosses the right-of-way line.
8. [Fire Hydrant Location Markers. The installation of blue markers in accordance with IMUTCD to delineate the locations of the fire hydrants may be allowed by permit. The installation and maintenance of these markers is the sole responsibility of the Utility.](#)

### **10-3.05(05) Sanitary Sewer Lines**

The following applies.

1. Depth of Cover. All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of [36 inches \(0.9 m\)](#).

All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 4 ft (1.2 m). Further, all lines must be a minimum of [24 inches \(0.6 m\)](#) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

All lines must have a minimum depth of cover of [48 inches \(1.2 m\)](#) under ditches.

Exceptions may be authorized for existing lines to remain in place with a reduction of 6 inches (0.15 m) in the depths of cover specified above.

2. Crossings. Lines to be operated under pressure or which do not conform to the material, strength or cover depths contained herein must be [encased under the roadway and within 5 ft \(1.5 m\) of the roadway](#). Encasement under entrances may be omitted in consideration of the type and amount of traffic, depth, condition and maintenance responsibility. [A gravity sewer line would not need to be encased](#).
3. Materials. New and relocated sewer lines may be of any material which has been proven to be of satisfactory strength and durability in local use, provided all other requirements are met.
4. Non-Metallic Lines. Where non-metallic lines are installed without a metallic casing, a durable metal wire must be installed concurrently or other means provided for detection purposes.
5. Location Exceptions. Except where relocation is necessary to clear existing lines from structures or other highway appurtenances or for other specific reasons, INDOT may permit existing lines to remain in place at any location except longitudinally under through traffic lanes or ramps of limited access highways, provided the line is of satisfactory quality and depth, manholes are adjusted as needed and provisions are made to ensure that any future service lines will not violate access control limits or disturb the roadway.

## **7.0 10-3.06 Overhead Power and Communication Lines**

### **10-3.06(01) General**

The following applies.

1. Type of Construction. Longitudinal lines shall be limited to single pole construction. Transverse lines shall be limited to single pole construction where practicable, but may also be approved to use the same type of support as used on the portion of the line

immediately adjacent to the highway right-of-way provided all other requirements herein are met.

2. Vertical Clearances. Except as noted in Item 3c below, the minimum vertical clearance for overhead communication and power lines above the highway shall be not less than 18 ft, or greater if required by the National Electrical Safety Code or other laws and regulations.
3. Location. The following applies.
  - a. In rural areas and at uncurbed sections in urban areas, poles supporting longitudinal lines shall be located on a uniform alignment as close to the right-of-way line as possible. Guy wires placed within the right-of-way shall be held to a minimum and should normally be in line with the pole line. Other locations may be permitted for guy poles and wires, but in no case shall they be located within the specified clear zone. At curbed sections, in urban areas, poles shall be located as far as practical behind the outer curbs and preferably adjacent to the right-of-way line, but in all cases shall meet the clear zone requirements in Chapter Forty-Nine (Roadside Safety/Clear Zone Concept) of the INDOT Design Manual.
  - b. At crossings, no poles will be permitted in the center median or more than 36 inches (0.9 m) inside the right-of-way line where practical. Exceptions may be allowed where the cost of spanning an extreme width is excessive and where poles can be located in accordance with the intent and other provisions of this Policy.
  - c. As a general rule, the horizontal and vertical location of overhead power and communication lines relative to a highway bridge or other structure shall provide adequate clearance for construction and maintenance activities, wherever practical.
4. Clear Roadside. All new utility pole installations and other above ground obstructions shall be located outside of the appropriate clear zone (see the INDOT's Design Manual - Chapter Forty-Nine: Roadside Safety/Clearzone Concept). If the clear zone extends to the right-of-way line, then no installation will be permitted unless approved in accordance with Section 10-3.01(05). Existing installations must be relocated to outside of the clear zone (see the INDOT's Design Manual -Chapter Forty-Nine: Roadside Safety/Clearzone Concept), when they are found within the project limits of any highway construction contract.

Guy wires to ground anchors and stub poles shall not be placed between a pole and the traveled way where they encroach upon the clear zone.

5. Ground Mounted Appurtenances. Ground mounted pedestals or other appurtenances must be located at or near the right-of-way line. Ground mounted appurtenances shall be provided with a vegetation-free area extending one foot beyond the appurtenance in all directions. The vegetation-free area may be provided by an extension of the mounting pad, or by heavy duty plastic or similar material. The housing for ground mounted appurtenances shall be painted an inconspicuous color.

## **8.0 10-3.06(02) Telecommunication Towers**

The following applies.

1. Applicability. This Section applies specifically to telecommunication towers placed within highway right-of-way as part of resource sharing projects. These towers will typically occupy space within Interstate/limited access rights-of-way. Telecommunication towers that are not a part of a resource sharing project will not be permitted to occupy Interstate/limited access right-of-way. A resource-sharing project is herein defined as a project undertaken by the State of Indiana and a telecommunication provider to achieve a common goal of meeting each other's communication needs.
2. Location. All location sites must meet the following requirements.
  - Adequate sight distance for safe ingress to and egress from the tower site.
  - The tower shall be located outside the clear zone and where it is unlikely to be struck unless shielding already exists. Desirable distance is 85 ft (26 m)
  - There is an adequate pull-off area beyond the shoulder for construction and maintenance of the tower.

Listed below, in descending order of preference, are the site locations that INDOT will consider.

- a. Priority 1. Vehicle access to the tower site can be obtained from outside the limited access control roadway. This would include access from frontage or local roads. This also would include access from ramps to rest areas, weigh stations, etc. Where fencing exists, gates need to be placed at appropriate locations to

provide controlled access to the towers. Gates should be sized to accommodate the type of maintenance traffic and equipment that will access the tower. All gates shall be secured with locks, with keys being distributed to appropriate personnel. A locked gate access on the Interstate System requires FHWA approval in addition to INDOT approval. See Figure 10-3A.

- b. Priority 2. Within the interchange, vehicle access can be obtained from the right-hand side of the diagonal ramps. See Figure 10-3B.
- c. Priority 3. Within the interchange, vehicle access can be obtained from the left-hand side of the diagonal ramps. See Figure 10-3C.

Installations within Interstate/limited access right-of-way that do not meet the criteria described above can only be approved through joint INDOT/FHWA concurrence.

3. Multiple Providers. Multiple telecommunication providers will be allowed on a tower. However, only one provider will maintain the tower structure and all attachments. The provider who will maintain the tower will be chosen through standard INDOT selection procedures.

## **9.0 10-3.07 Underground Power Lines**

The following applies.

1. Depth of Cover. All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of 36 inches (0.9 m) for encased lines and 36 inches (0.9 m) for non-encased lines.

All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 48 inches (1.2 m) for encased and non-encased lines. Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

All lines must have a minimum depth of cover of 4 ft (1.2 m) under ditches.

Exceptions may be authorized for existing lines to remain in place with a reduction of 6 inches (0.15 m) in the depths of cover specified above. Further reductions may be

permitted if the pipeline is protected by a reinforced concrete slab which meets the following requirements:

- a. Width. Three times the pipe diameter but not less than 4 ft (1.2 m)
  - b. Thickness. Minimum of 6 inches (0.15 m)
  - c. Reinforcing. Minimum of [No. 4 \(13M\) epoxy coated](#) bars on 12 inches (0.3 m) centers, or equivalent.
  - d. Cover. Minimum of 6 inches (0.15 m) between the slab and top of pipe.
2. Crossings. Underground power lines operating at 600 volts or less may be encased or non-encased provided the installation complies with the depths of cover specified herein. Lines operating above 600 volts must be encased. Consideration should be given to encasement or other suitable protection for any power lines near footings of bridges or other highway structures or near other locations where there may be hazards.

Encasement, where used, may be metallic or nonmetallic. Such encasement must be designed to support the load of the highway and superimposed loads thereon, including that of construction equipment. The strength of the encasement must equal or exceed structural requirements for drainage culverts, and it must be composed of materials of satisfactory durability under conditions to which it may be subjected. Where used, encasement must be provided under center medians, from top of backslope to top of backslope for cut sections, 5 ft (1.5 m) beyond toe of slope and under fill sections, 5 ft (1.5 m) beyond face of curb in urban sections and all side streets, and 5 ft (1.5 m) beyond any structure which the line passes under or through. Encasement may be omitted under medians which are substantially wider than normal standards for such roadways, [such as when the roadways are on independent alignments](#).

3. Markers. The Utility must place a readily identifiable and suitable marker immediately above any underground power line where it crosses the right-of-way line.
4. Location and Installation. Longitudinal lines may be placed by plowing or open trench method and must be located on uniform alignment as near as practical to the right-of-way line to provide space for possible future highway construction and/or utility installations. Distance from the right-of-way line will depend upon the terrain involved and obstructions such as trees and other existing underground or aerial utility lines. On highways with frontage roads, such installation will be located between the frontage roads and the right-of-way lines. Underground power lines must not be placed longitudinally beneath the median or beneath through traffic roadways including shoulders. Underground power lines placed longitudinally along a connecting roadway

must not be placed under the median or beneath through traffic roadways, including shoulders, where that roadway connects with a State highway.

Underground lines to be installed across any existing roadway must be installed by [trenchless technologies](#) in accordance with [INDOT Specifications \(Section 716: Trenchless Pipe Installation\)](#). When installed by jacking or boring, encasement may be required. Bore pits should generally be located as required in Section 10-3.03(07) Item No. 7. Adequate warning devices, barricades and protective devices [must be used in accordance with the approved Traffic Control Plan](#). Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, temporary concrete barrier walls or other approved devices must be installed for protection of traffic in accordance with [INDOT Design Manual \(Part Eight: Workzone Traffic Control\)](#), [INDOT Specifications and the approved Traffic Control Plan](#). Bore pits must be located and constructed to not interfere with highway structural footings. Shoring must be used if necessary.

5. [Ground Mounted Appurtenances. Ground mounted pedestals or other appurtenances must be located at or near the right-of-way line. Ground mounted appurtenances shall be provided with a vegetation-free area extending one foot beyond the appurtenance in all directions. The vegetation-free area may be provided by an extension of the mounting pad, or by heavy duty plastic or similar material. The housing for ground-mounted appurtenances shall be painted an inconspicuous color.](#)
  
6. Manholes, Vaults and Pits. In general this type of access point must be limited to those necessary to install and service the line and must be directly in line with the utility facility and of the minimum width to accomplish their intended function and comply with any other necessary codes or requirements. They must be installed flush with the roadway or ground surface and must be of sufficient strength to withstand the superimposed loads of the roadway and traffic, including that of construction equipment. In no case will they be placed or permitted to remain in the pavement or shoulders of high-volume roadways. Exceptions in accordance with Section 10-3.01(05) may be permitted on roadways in urban areas in cases of extreme hardship. Manholes may be placed or permitted to remain in place under traffic lanes of low-volume roadways provided measures are taken to minimize these installations and to avoid their locations at intersections as practical.

## **10.0 10-3.08 Underground Communication Lines**

The following applies.

1. Depth of Cover. All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of [36 inches \(0.9 m\)](#).

All lines which are under or within 5ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of [48 inches \(1.2 m\)](#) for encased and non-encased lines. Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.

All lines must have a minimum depth of cover of [48 inches \(1.2 m\)](#) under ditches.

Exceptions may be authorized for existing lines to remain in place with a reduction of 6 inches (0.15 m) in the depths of cover specified above.

2. Crossings. Lines crossing highways do not require encasement except where in the judgement of INDOT it is necessary for the protection of the highway or utility facility. Where encasement is not used, the Utility must specifically agree that the pavement will not be cut for repairs at any time in the future. Consideration should be given to encasement or other suitable protection for any communication facilities near footings of bridges or other highway structures or near other locations where there may be hazards.

Encasement, where used, may be metallic or nonmetallic. Such encasement must be designed to support the load of the highway and superimposed loads thereon, including that of construction equipment. The strength of the encasement must equal or exceed structural requirements for drainage culverts, and it must be composed of materials of satisfactory durability under conditions to which it may be subjected. Where used, encasement must be provided under center medians, from top of backslope to top of backslope for cut sections, 5 ft (1.5 m) beyond toe or slope and under fill sections, 5 ft (1.5 m) beyond face of curb in urban sections and all side streets, and 5 ft (1.5 m) beyond any structure which the line passes under or through. Encasement may be omitted under medians which are substantially wider than normal standards for such roadways, [such as when the roadways are on independent alignment.](#)

3. Markers. The Utility must place a readily identifiable and suitable marker immediately above any underground communication line where it crosses the right-of-way line.
4. Non-Metallic Lines. Where non-metallic lines are installed without a metallic casing, a durable metal wire must be installed concurrently or other means provided for detection purposes.

5. Location and Installation. Longitudinal lines may be placed by plowing or open trench method and must be located on uniform alignment as near as practical to the right-of-way line to provide space for possible future highway construction and/or utility installations. Distance from the right-of-way line will depend upon the terrain involved and obstructions such as trees and other existing underground or aerial utility lines. On highways with frontage roads, such installation will be located between the frontage roads and the right-of-way lines. Underground power lines must not be placed beneath the center median or beneath through traffic roadways or connecting roadways, including shoulders.

Underground lines to be installed across any existing roadway must be installed by [trenchless technologies](#) in accordance with [INDOT Specifications \(Section 716: Trenchless Pipe Installation\)](#). When installed by jacking or boring, encasement may be required. Bore pits should generally be located as required in Section 10-3.03(07) Item No. 7. Adequate warning devices, barricades and protective devices [must be used in accordance with the approved Traffic Control Plan](#). Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, concrete barrier rail or other approved devices must be installed for protection of traffic in accordance with [INDOT Design Manual \(Part Eight: Workzone Traffic Control\)](#), [INDOT Specifications](#) and the approved Traffic Control Plan. Bore pits must be located and constructed to not interfere with highway structural footings. Shoring must be used if necessary.

6. [Ground Mounted Appurtenances. Ground mounted pedestals or other appurtenances must be located at or near the right-of-way line. Ground mounted appurtenances shall be provided with a vegetation-free area extending one foot beyond the appurtenance in all directions. The vegetation-free area may be provided by an extension of the mounting pad, or by heavy duty plastic or similar material. The housing for ground-mounted appurtenances shall be painted an inconspicuous color.](#)
7. Manholes, Vaults and Pits. In general this type of access point must be limited to those necessary to install and service the line and must be directly in line with the utility facility and of the minimum width to accomplish their intended function and comply with any other necessary codes or requirements. They must be installed flush with the roadway or ground surface and must be of sufficient strength to withstand the superimposed loads of the roadway and traffic, including that of construction equipment. In no case will they be placed or permitted to remain in the pavement or shoulders of high-volume roadways. Exceptions in accordance with Section 10-3.01(05) may be permitted on roadways in urban areas in cases of extreme hardship. Manholes may be placed or permitted to

remain in place under traffic lanes of low-volume roadways in urban areas provided measures are taken to minimize these installations and to avoid their locations at intersections as practical.

## **11.0 10-3.09 Irrigation and Drainage Pipes, Ditches and Canals**

The following applies.

1. Irrigation and drainage facilities installed across any highway right-of-way must be designed, constructed and maintained in accordance with INDOT standards for culverts or bridges.
2. Longitudinal ditches and canals which would closely parallel the highway must not be permitted nor will any appurtenances be permitted within the clear zone which would constitute a hazard to traffic. See the INDOT Design manual -Chapter Forty-Nine: Roadside Safety/Clearzone Concept.

## **12.0 10-3.10 Miscellaneous**

### **10-3.10(01) General**

Various types of utility lines not specifically covered herein must be considered with the provisions of this policy in accordance with the nature of the line. It must be a general practice to consider all lines carrying caustic, flammable or explosive, heated or otherwise hazardous materials under the provisions for high-pressure gas and liquid petroleum lines. The following applies:

1. Preservation, Restoration and Cleanup. The following applies.
  - a. Disturbed Areas. The area disturbed by utility installations or relocations should be minimized. Restoration methods must be in accordance with INDOT specifications and/or any special provisions contained in the approved work plan.
  - b. Spraying, Cutting and Trimming of Trees. The Utility is prohibited from such activities unless written permission is provided by INDOT. Where permission is granted, only light trimming is permitted. When the removal of a tree is

permitted, the stump must be removed and the hole properly backfilled as specified by INDOT. All debris, refuse and waste must be removed from the site. It is common that trees will need to be removed when a Utility is doing relocation work to accommodate an INDOT project. If the Utility wishes to do the removal, they must contact INDOT to see if there are any trees that must not be disturbed.

- c. Drainage. Care must be taken to avoid disturbing existing drainage facilities. Underground utility facilities must be backfilled with pervious material and outlets provided for entrapped water. Underdrains must be provided where necessary. No jetting or puddling will be permitted under the roadway.

2. Safety and Convenience. The following applies.

- a. Control of Traffic. Traffic controls for utility construction and maintenance operations must conform with the INDOT *Manual on Uniform Traffic Control Devices*. All construction and maintenance operations must be planned with full regard to safety and to minimize traffic interference. On heavily traveled highways, construction operations interfering with traffic should not be allowed during periods of peak traffic flow. Any such work must be planned so that closure of intersecting streets, road approaches, traffic lanes, or other access points is minimized. In accordance with INDOT Design Manual Chapter 82 (Traffic Control Plan), a traffic control plan must be prepared and submitted with the permit application.
- b. Servicing, Maintenance and Repairs. All utility facilities must be maintained in good repair both structurally and aesthetically. The utility use and occupancy agreement will identify the maintenance operations which are permitted and indicate situations where prior notification to INDOT is required. Maintenance of those facilities crossing limited access highways shall be from city streets, county roads, service roads, and approved openings provided in limited access right-of-way fences unless such alternatives are not practical. If maintenance is required within limited access right-of-way, a prior permit will be obtained from INDOT.
- c. The Utility is responsible to assure that the work site is secure against any hazard to the public at all times until all of the work is completed. The Utility must comply with INDOT Standards Specifications.
- d. The Utility should obtain environmental permit to assure that proper erosion control and storm water management measures are implemented at all times during work operations in accordance with INDOT Standards Specifications. The

Utility shall also be responsible for providing erosion control and storm water management measures to protect all restored areas upon completion of the project until the replacement vegetation achieves sustained growth.

- e. All pipe, conduit, wire, poles, cross arms or other materials distributed along the highway prior to installation shall be placed at least 30 ft (9 m) beyond the edge of the travel ways or behind existing guard rails.
  - f. Utility construction or maintenance operations on State highway right-of-way may be required to be discontinued during periods of inclement weather or when soil conditions are such that the utility work would result in extensive damage to the highway right-of-way.
3. Records. The Utility must maintain records that describe the utility usage, size, configuration, material, location, height or depth and any special features such as encasement, manholes and valves. These records must include all service lines which enter or cross the highway right-of-way. The information must be in a reproducible form which is available to other Utilities and highway agencies.
4. Construction Identification of Utilities. When it is likely that construction or maintenance activities could involve existing utilities, it is often desirable to locate and identify these facilities well in advance of the initiation of the work as an aid to both design and construction. The location of each underground utility should be identified by the Utility with stakes, paint or other temporary surface markings color coded by utility type. The recommended uniform color code system is as follows:
- a. Red: Electric power lines or conduits.
  - b. Yellow: Gas, petroleum, steam or other hazardous materials.
  - c. Orange: All types of communication lines.
  - d. Blue: Water systems and slurry pipelines.
  - e. Green: Storm and sanitary sewers.
  - f. Purple: Radioactive material.

### **10-3.10(02) Trenching and Backfill**

The essential features for trench and backfill construction are (a) restoration of the structural integrity of entrenched roadbed; (b) security of the pipe against deformation likely to cause

leakage; and (c) assurance against the trench becoming a drainage channel. The integrity of the pavement structure, shoulders and embankment are of primary concern.

Trenched construction, bedding and backfill must be in accordance with the *Indiana Department of Transportation Standard Specifications*. Other controls are as follows:

1. Trenches must be cut with vertical faces, where soil and depth conditions permit, with a maximum width of outside diameter of pipe plus 24 inches (0.6 m). They must be shored where necessary.
2. Bedding must be provided to a depth of 6 inches (0.15 m) or half the diameter of the pipe, whichever is less. For ducts not encased in concrete, not less than 3 inches (0.08 m) of bedding must be placed under the lower ducts. Bedding must consist of pit run sand and gravel mixture or other suitable material approved by the permit inspector. The bottom of the trench must be prepared to provide the pipe with uniform bedding support throughout the length of the installation.
3. [All backfill, whether on or off the roadway, must be in accordance with the INDOT Standard Specifications \(Section 715.08: Backfilling\).](#)

### **10-3.10(03) Underground Plant Protection**

[Indiana law requires that underground utilities should subscribe to the Indiana Underground Plant Protection Service \(IUPPS\).](#) Doing this ensures protection of the Utility's facilities because it is required by law that the [IUPPS](#) is called at least two days prior to any excavation work. This allows the Utility to mark its underground facilities before excavation work is started.

When surveys are done for proposed highway projects, surveyors should also call IUPPS. While Utilities are not required by law to locate their facilities for survey work, it is still desirable that this is done. If the facilities are marked for the survey, add this information to the project plans. This will allow the designer to design around these facilities, if possible, and allows the Utility to be notified in advance of an upcoming project and any potential impact to their facilities. The Utility also will have a chance to meet with the designer and discuss possible alternatives that might lessen any impact. Therefore, it is beneficial to all parties involved that Utilities subscribe to this service.

### **10-3.10(04) Pavement Cuts**

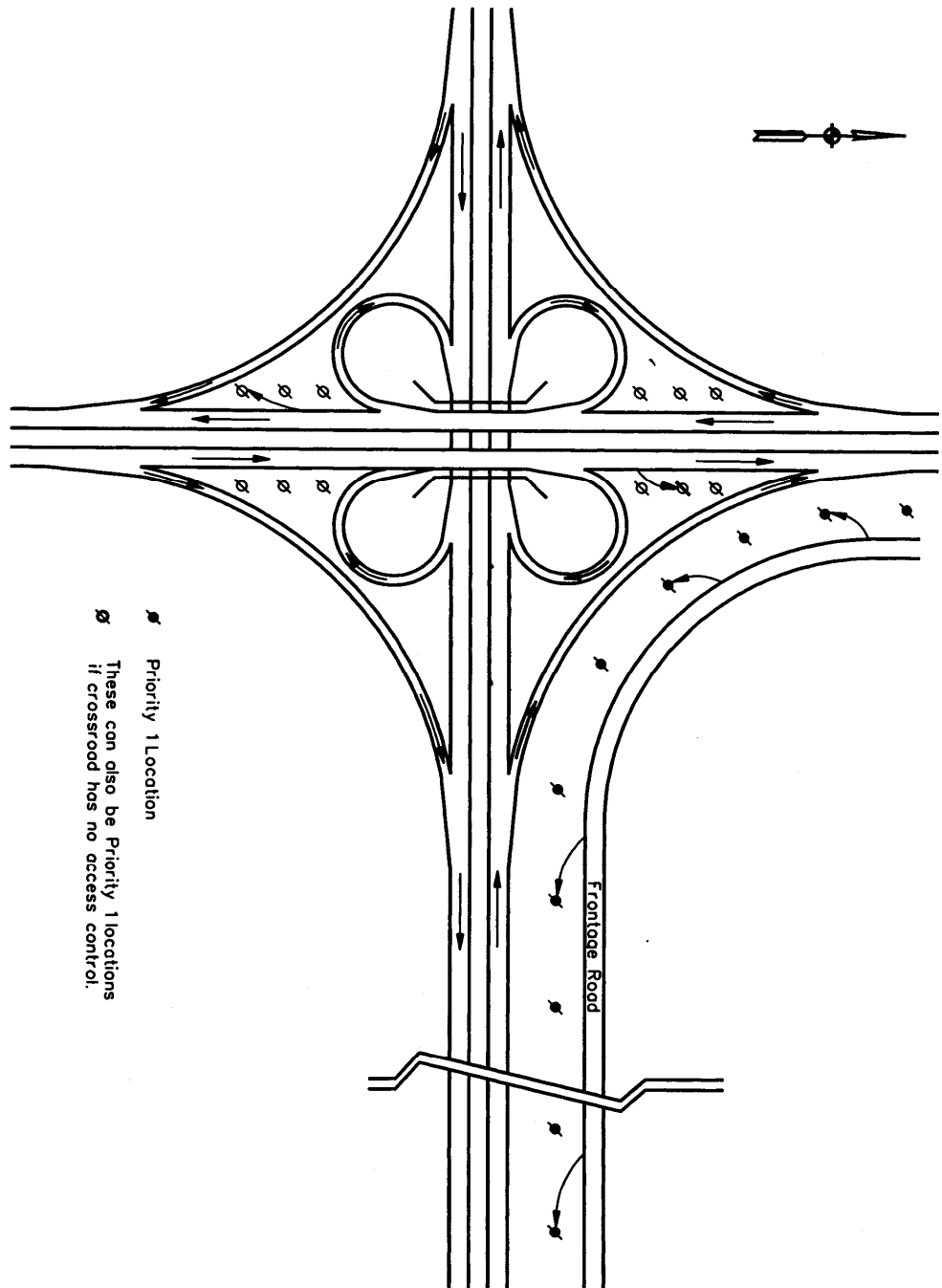
Open cutting of the pavement to install utility facilities is highly discouraged because it adversely affects the structural integrity of the roadway. If it is not possible to install a facility without disturbing the pavement, the Utility will be required to provide written documentation and justification for an open cut. Where a longitudinal open cut is proposed or where several cuts are proposed to cross the pavement in the same area, the INDOT District office will inspect the roadway to determine the extent of road repair that will be required.

Normally, the Utility will be required to use patch materials at least equal in quality and thickness of layer as the original construction and placed in accordance with INDOT Specifications. Any time that a pavement is cut to install, repair or maintain utility lines a "T" section pavement patch is required (as shown in Figures 10-3D, 10-3E and 10-3F) . The T section should extend 2 ft (0.6 m) beyond the open cut on all sides. A 6 inch (0.15m) fillet shall be formed to transition between the new pavement section and the filled trench area. Trench shall be backfilled in accordance with current INDOT specifications. Flowable backfill may be used to fill the trench area. Class C concrete shall be used for the T section patch. Hooked anchor bolts shall be placed 5 ft (1.5 m) on center in accordance with current INDOT standards. The concrete portion of the T patch shall be placed level with the surface of pavements with no asphalt over lays. The concrete portion of the T patch should come to within 2 inches (0.05 m) of the existing pavement surface with 2 inches (0.05 m) of HVAC surface on top to match existing pavement surface.

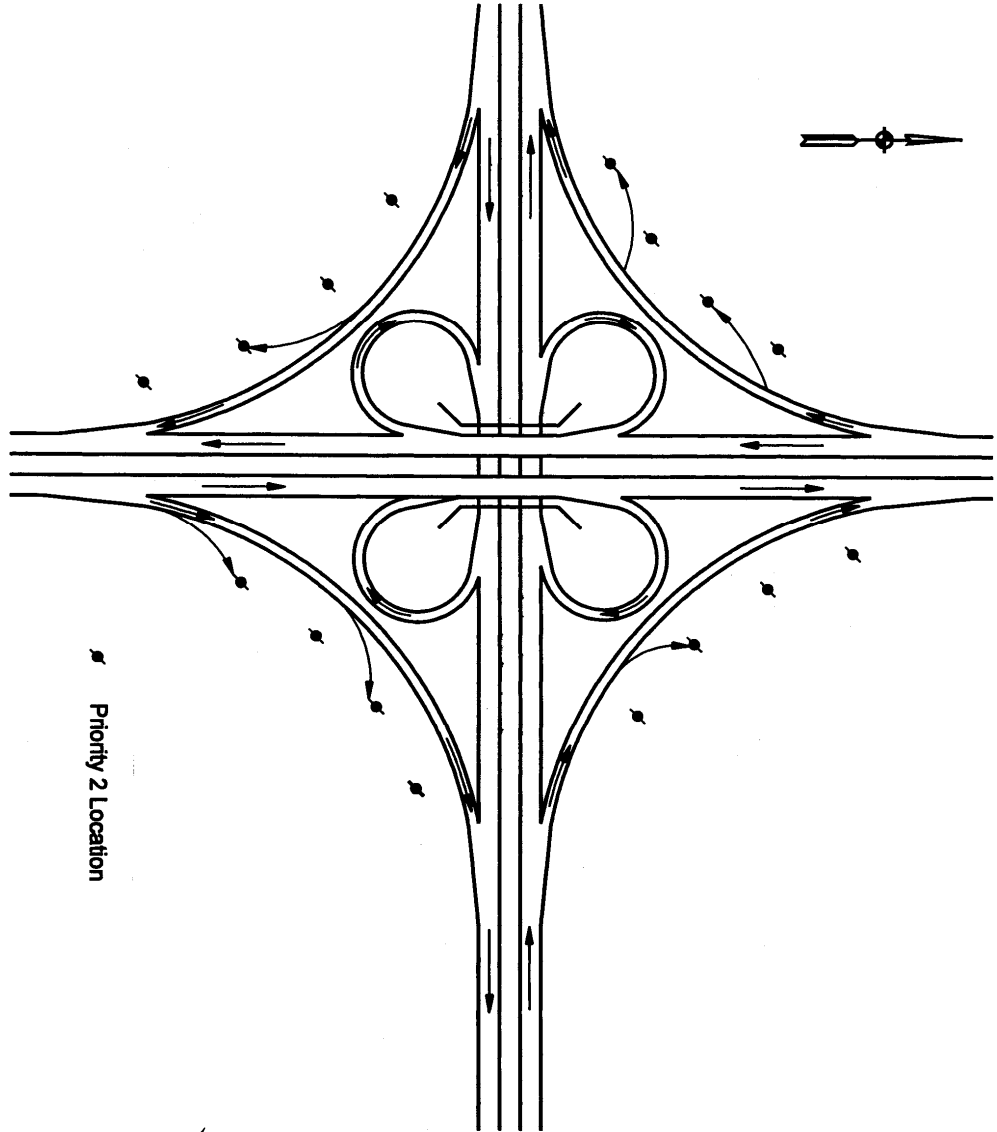
### **10-3.10(05) Other**

1. Emergency repairs may be performed within the right-of-way when physical conditions or time considerations prevent application of the usual permit. However, the Utility should notify INDOT about its plans or actions for alleviating dangerous situations, and arrangements made for the control and protection of traffic or pedestrians affected by its proposed operations. A permit application should be filed within 5 working days to cover any emergency repairs.
2. If a Utility discontinues use of a facility, the facility shall be entirely removed from the right-of-way within sixty days after its use is discontinued. A record of underground utility facilities abandoned in the right-of-way shall be maintained in a Utility's permanent files until the facility is completely removed from the ground.

3. INDOT reserves the right to inspect all utility installations within highway right-of-way. If any violations or deficiencies are observed, the subsequent inspection costs may be charged to the Utility

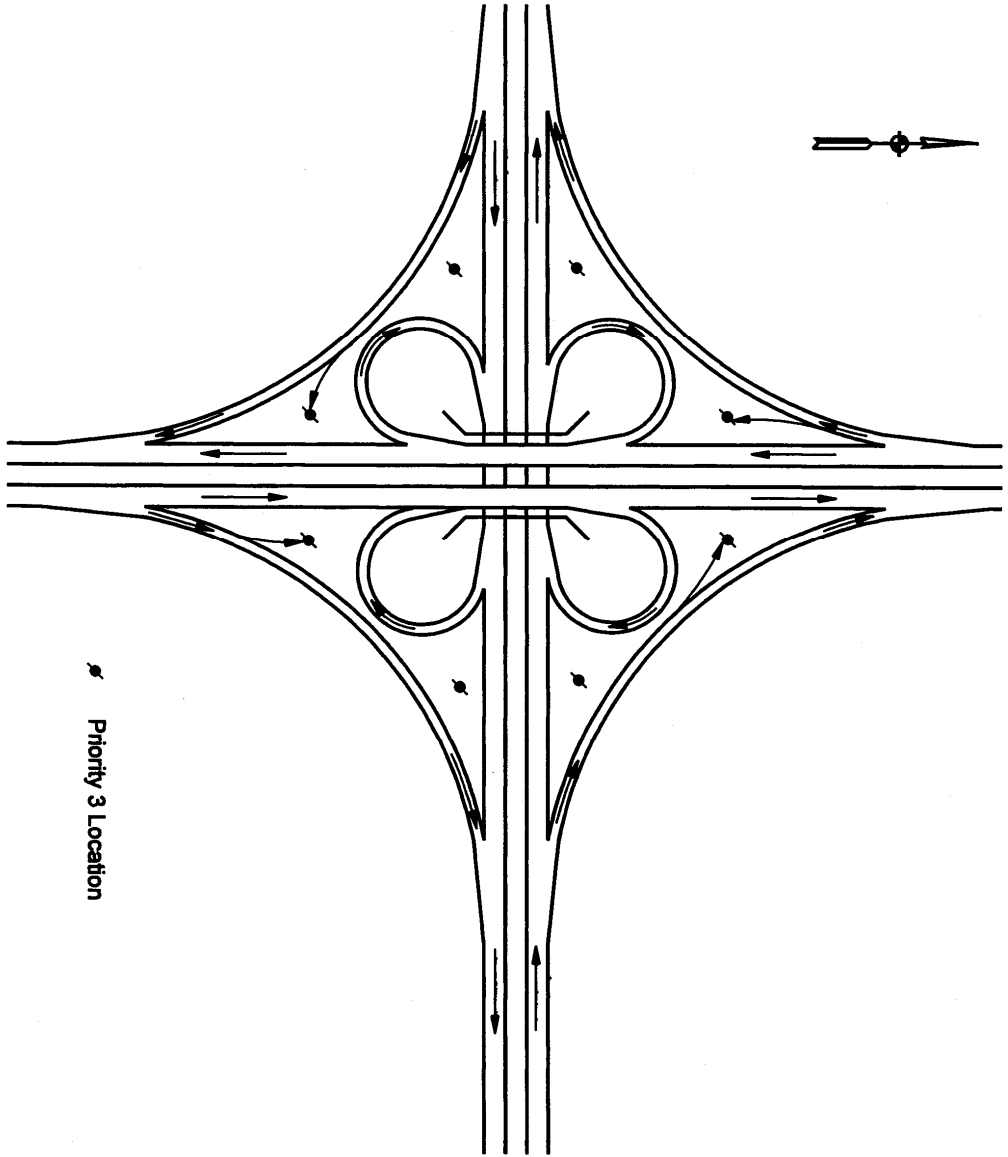


**PRIORITY 1 ACCESS**  
 Figure 10-3A



Priority 2 Location

**PRIORITY 2 ACCESS**  
Figure 10-3B



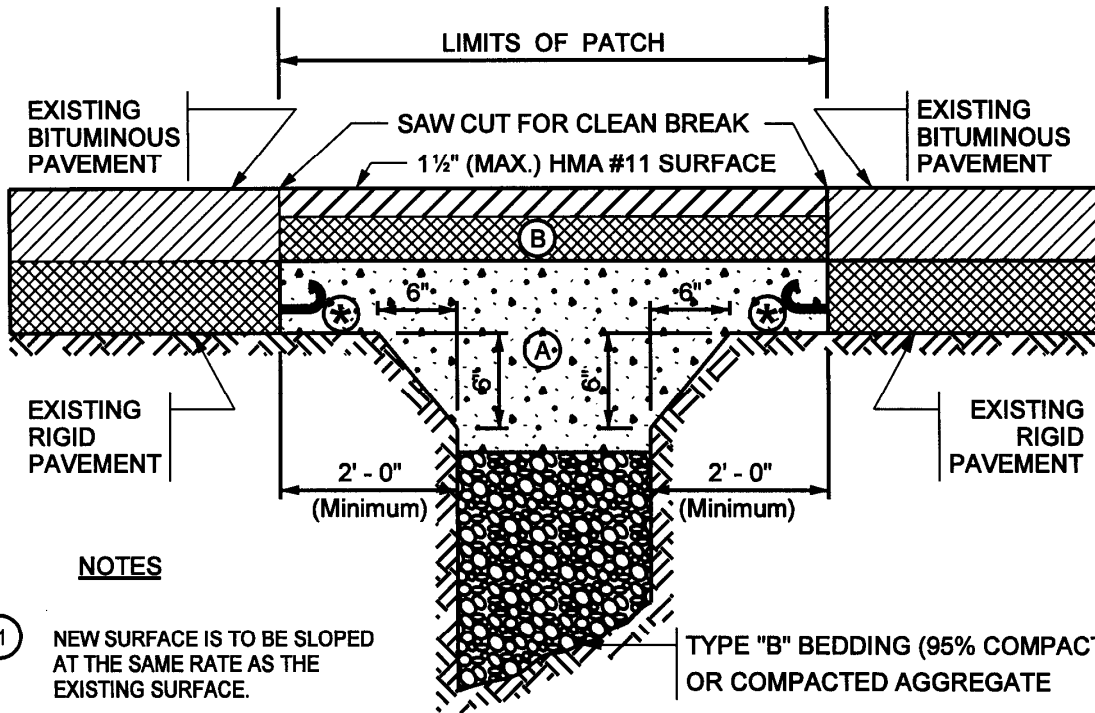
Priority 3 Location

**PRIORITY 3 ACCESS**

Figure 10-3 C

# DETAIL FOR CUT ROAD PATCHING, LARGE PATCH

FOR ALL ROAD CUTS THAT REQUIRE THE EXISTING PAVEMENT TO BE CUT MORE THAN 10 FEET ON ANY ONE SIDE, USE THIS DETAIL.



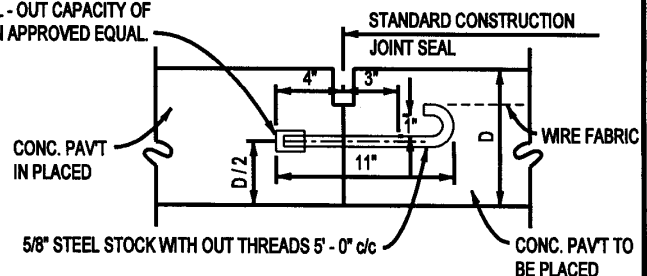
## NOTES

- 1 NEW SURFACE IS TO BE SLOPED AT THE SAME RATE AS THE EXISTING SURFACE.
- 2 EXISTING PAVEMENT IS TO BE SAW CUT FOR A CLEAN BREAK.
- 3 COMPACTED AGGREGATE IS TO BE LAID AT 6" LIFTS AND IS TO BE COMPACTED TO A MINIMUM OF 95%.
- 4 TRENCH SPOIL IS TO BE REMOVED FROM THE WORK SITE.
- 5 1 1/2" (MAX.) HMA #11 SURFACE
- 6 BITUMINOUS TACK APPLIED AS PER "INDIANA DEPT. OF TRANSPORTATION STANDARD SPECIFICATIONS - 1999" SECTION 406 & 902.

\* EXPANSION ANCHOR WITH A MINIMUM TENSILE PULL - OUT CAPACITY OF 9000 lbs OR AN APPROVED EQUAL.

## LEGEND

- A PLAIN CONCRETE IS TO BE FINISHED FLUSH TO THE EXISTING RIGID PAVEMENT.
- B HOT MIX ASPHALT IS TO BE FINISHED FLUSH TO THE EXISTING BITUMINOUS MATERIAL AND IS TO BE COMPACTED AS REQUIRED IN THE "CUT ROAD SPECIAL PROVISIONS"

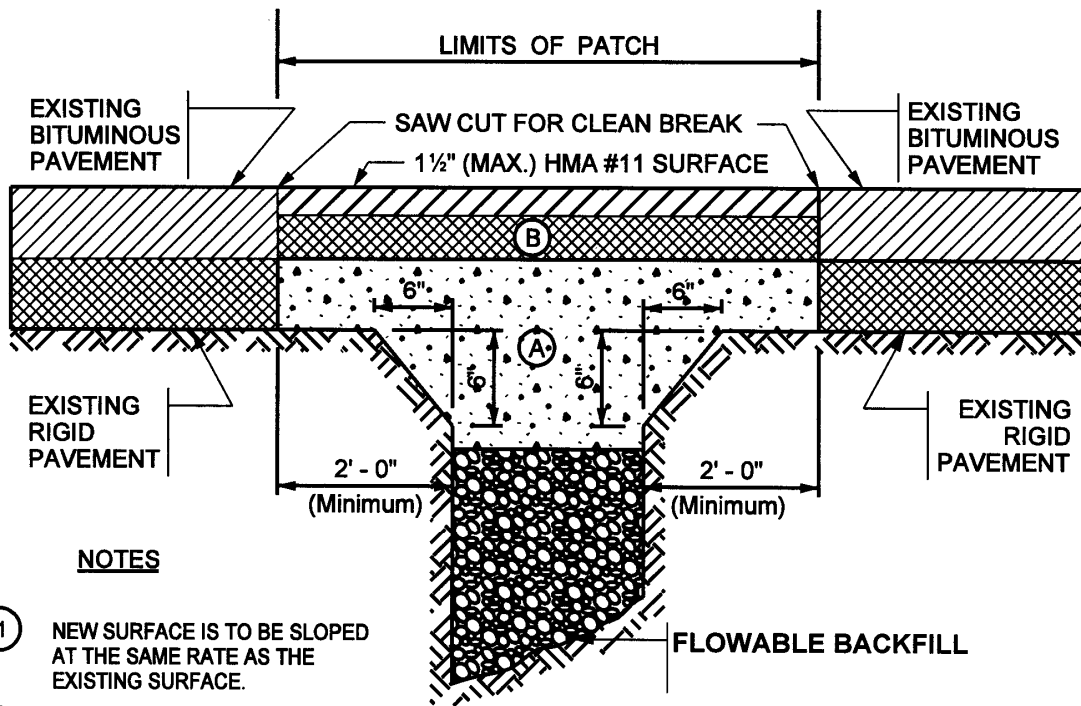


## DETAIL OF ANCHOR BOLT JOINT

Figure 10-3 D: Detail for Cut Road Patching, Large Patch

# \* *DETAIL FOR CUT ROAD PATCHING ASPHALT OVER RIGID PAVEMENT*

*ON ALL CUTS, ROADS THAT REQUIRE  
THE EXISTING PAVEMENT TO BE RE-  
MOVED. THE DETAIL AS SHOWN BE-  
LOW SHALL BECOME PART OF THIS PERMIT*



**NOTES**

- ① NEW SURFACE IS TO BE SLOPED AT THE SAME RATE AS THE EXISTING SURFACE.
- ② EXISTING PAVEMENT IS TO BE SAW CUT FOR A CLEAN BREAK.
- ③ FLOWABLE BACKFILL IN ACCORDANCE WITH INDOT STANDARDS
- ④ TRENCH SPOIL IS TO BE REMOVED FROM THE WORK SITE.
- ⑤ 1½" (MAX.) HMA #11 SURFACE
- ⑥ BITUMINOUS TACK APPLIED AS PER "INDIANA DEPT. OF TRANSPORTATION STANDARD SPECIFICATIONS - 1999" SECTION 406 & 902.

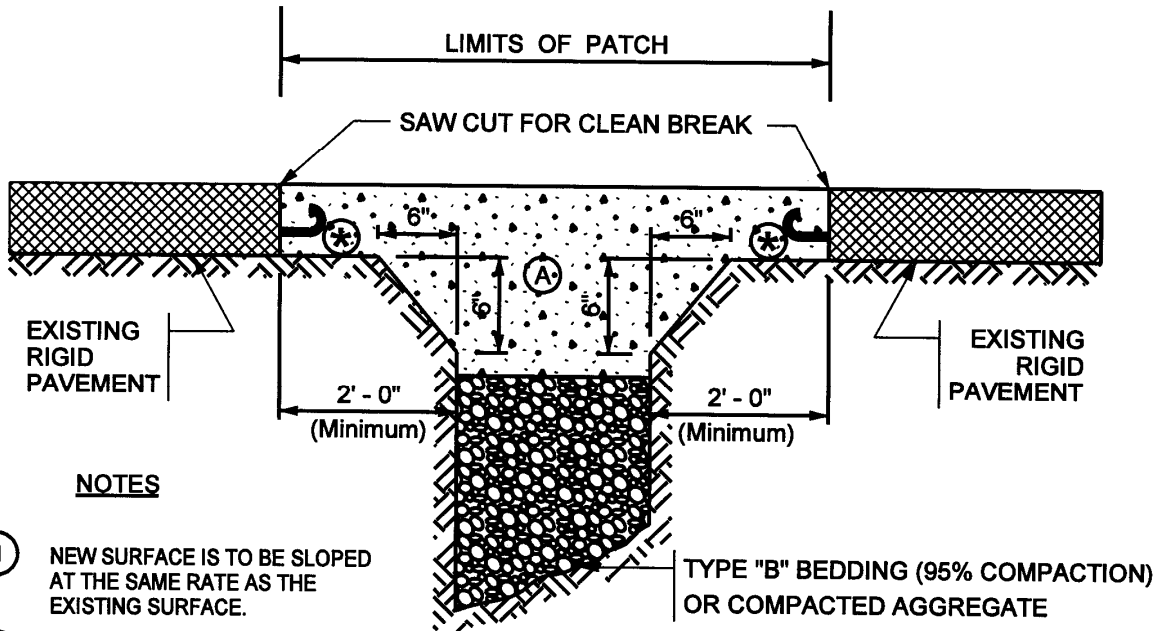
**LEGEND**

- Ⓐ PLAIN CONCRETE IS TO BE FINISHED FLUSH TO THE EXISTING RIGID PAVEMENT.
- Ⓑ HOT MIX ASPHALT IS TO BE FINISHED FLUSH TO THE EXISTING BITUMINOUS MATERIAL AND IS TO BE COMPACTED AS REQUIRED IN THE "CUT ROAD SPECIAL PROVISIONS"

Figure 10-3 E: Detail for Cut Road Patching, Asphalt over Rigid Pavement

# DETAIL FOR CUT ROAD PATCHING, RIGID PAVEMENT

ON ALL CUTS, ROAD THAT REQUIRE THE  
EXISTING PAVEMENT TO BE REMOVED.  
THE DETAIL AS SHOWN BELOW SHALL  
BECOME A PART OF THIS PERMIT.



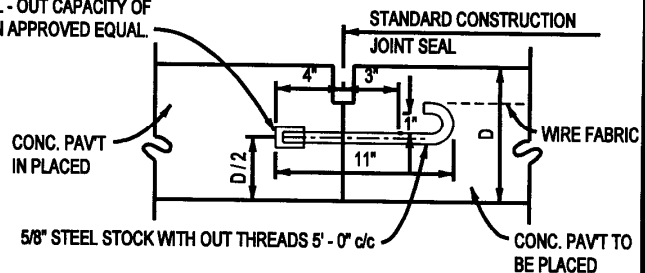
## NOTES

- 1 NEW SURFACE IS TO BE SLOPED AT THE SAME RATE AS THE EXISTING SURFACE.
- 2 EXISTING PAVEMENT IS TO BE SAW CUT FOR A CLEAN BREAK.
- 3 COMPACTED AGGREGATE IS TO BE LAID AT 6" LIFTS AND IS TO BE COMPACTED TO A MINIMUM OF 95%.
- 4 TRENCH SPOIL IS TO BE REMOVED FROM THE WORK SITE.

## LEGEND

- (A) PLAIN CONCRETE IS TO BE FINISHED FLUSH TO THE EXISTING RIGID PAVEMENT.
- (B) HOT MIX ASPHALT IS TO BE FINISHED FLUSH TO THE EXISTING BITUMINOUS MATERIAL AND IS TO BE COMPACTED AS REQUIRED IN THE "CUT ROAD SPECIAL PROVISIONS"

\* EXPANSION ANCHOR WITH A MINIMUM. TENSILE PULL - OUT CAPACITY OF 9000 lbs OR AN APPROVED EQUAL.



DETAIL OF ANCHOR BOLT JOINT

Figure 10-3 F: Detail for Cut Road Patching, Rigid Pavement

## **CHAPTER 4**

### **SUMMARY**

#### **4.1 Conclusions**

This study revisited and analyzed INDOT's current utility accommodation policy (UAP) in order to develop a new Utility Accommodation Policy. This would address some of the challenges of the existing UAP and would achieve effective accommodation of existing and new utilities while coordinating appropriately with present FHWA regulations, policies, and practices dealing with utility relocation and accommodation matters. A questionnaire survey to 30 individuals from different utility companies located in the Midwest and a Focus Group meeting with individuals representing all the major utilities, consulting engineering firms, INDOT and FHWA were utilized to obtain input regarding the major challenges/shortcomings in the current UAP. Based on the comparison between INDOT's UAP and the UAPs of Midwestern states such as Ohio, Kentucky, Illinois, Wisconsin, Minnesota, Tennessee, and Michigan, the research team and the SAC identified areas where the existing UAP was not effective. Changes in the UAP were suggested and evaluated by the SAC and the research team through numerous discussions. Table 4.1 summarizes the changes which will be incorporated in the new UAP.

**Table 4.1 Modifications to the Utility Accommodation Policy (UAP)**

<b>Section</b>	<b>Title</b>	<b>Modifications</b>
10-3.01(04)	Other requirements	<i>New text:</i> A traffic control plan will be included with each permit request or reimbursement agreement in accordance with INDOT Design Manual Chapter Eighty-Two (Traffic Control Plan)
10-3.01(06)	Prior instructions	<i>New text:</i> The policy is not intended to serve as the basis for determining financial responsibility for replacing or adjusting facilities. Information regarding reimbursement of utility relocations and adjustments can be found in Federal Highway Administration Program guide: Utility Relocation and Accommodation on Federal-Aid Highway Projects. This statement of policy and procedure will not be interpreted or applied in a manner in violation of, or inconsistent with state law. The INDOT authority with respect to the State highway right-of-way and its facilities emanates from the State law
10-3.02	Definitions	Thirty three new definitions were added to the current UAP.
10-3.03(01)	Permits	<p><i>New text:</i> A permit shall be granted unless INDOT makes any of the following findings: that an applicant has a history of not responding to INDOT requests, that there is no public need for the placement of the requested facility, the placement will unduly threaten the safety and convenience of highway users, or that the proposed installation is not in compliance with the Utility Accommodation Policy.</p> <p><i>New text.</i> Failure of the Utility to do any of the following constitutes grounds to revoke a permit issued under this Policy:</p> <ol style="list-style-type: none"> <li>1) comply fully with the terms of the permit, including the provisions set forth in this Part;</li> <li>2) remove, relocate or modify its facilities in accordance with the INDOT approved work plan, when required to do so by INDOT for a highway project.</li> </ol> <p><i>New text:</i> INDOT may impose sanctions and conditions on a Utility which may include that the permit be revoked in part, and/or a surety bond be required.</p> <p><i>New text:</i> Each permit applicant shall prepare an emergency contingency plan to address safety and unexpected conditions during the work described in the permit.</p>
10-3.03(03)	Private lines	<i>New text:</i> Private line designs (Chapter Forty-Nine of INDOT Design Manual), installations, operations and maintenances must conform to all other applicable requirements contained herein. The installation of private lines or conduits on the right-of-way for the purpose of draining wetlands is prohibited. A special agreement may be required in certain circumstances

Section	Title	Modifications
10-3.03(05)	Access control	<p><i>New text:</i> INDOT will advise the utility if there are any exceptions. Access for servicing a utility along or across a limited access highway shall normally be restricted to private easements, frontage roads where provided, or nearby adjacent public roads.</p>
10-3.03(06)	Location	<p><i>New text:</i></p> <ul style="list-style-type: none"> <li>• The horizontal location of above-ground utility lines within the highway right- of-way shall conform with the INDOT Design Manual (Chapter Forty Nine: Roadside Safety/Clear Zone Concept). New or relocated above-ground utility installations are to be located outside the clear zone</li> <li>• Utilities will not be permitted to occupy INDOT owned appurtenances or cross under State Highways through culverts or other drainage facilities</li> <li>• Utilization of highways by utilities requires that the type and size of its facilities and the manner and extent of its installations shall not materially impair the scenic quality</li> <li>• Service connections to adjacent properties should be discouraged from within the access control limits</li> <li>• A warning device (trace wire, metallic tape, etc.) shall be placed at a minimum depth of 12 inches (0.3 m) below the existing ground surface and above the installed high risk utility lines (gas lines, petroleum lines, water lines, etc.) to help locate the facility in the future. Any non-metallic pipe, cable, or other kind of utility line which lacks a continuous and integral metallic component capable of detection by locating instruments shall be accompanied in its location by a continuous detectable metallic tracer wire or metallic tape.</li> <li>• Utility sign markers if used, should be placed by the utility within the right-of-way fence lines</li> <li>• When a utility facility exists within the right-of-way of an existing or proposed highway, it may remain provided it does not adversely affect highway safety based on sound engineering judgment and economic considerations. The existing facility shall be relocated if it conflicts with any construction activities or it is located longitudinally under the pavement or shoulder for a reconstruction project, or it if conflicts with occupancy rules for limited access or adversely safety</li> </ul> <p>The use of subsurface utility engineering (SUE) to locate buried facilities is encouraged by INDOT. Approval from INDOT must be received prior to using any SUE procedures.</p> <p><i>Deleted Text:</i></p> <ul style="list-style-type: none"> <li>• Underground utility crossings which are encased should be constructed in a manner that allows for replacement of the line within the existing encasement in case the existing line ruptures.</li> </ul>

Section	Title	Modifications
10-3.03(07)	Design	<p><i>New text:</i></p> <ul style="list-style-type: none"> <li>• Underground crossings of all highways shall be made without disturbing existing pavements. Open cut of pavement will not be considered, unless it is demonstrated there is no reasonable alternate method available. Casing, pipe, or conduit crossings of the highway shall be installed by trenchless technologies without disturbing the pavement or paved shoulders. Water jetting will not be permitted</li> </ul>
10-3.03(07)	Design (cont.)	<p><i>New text</i></p> <ul style="list-style-type: none"> <li>• Boring or jacking under State highways shall be accomplished from pits located a minimum of 30 ft (9 m) from the edge of pavements on partial and fully access-controlled highways and at a distance of 10 ft (3 m) plus the depth of the pit without shoring on conventional highways. Wet boring or jetting will not be permitted. On the interstate system, the pits shall be located outside the access control fence</li> <li>• All borings shall be accomplished with INDOT specifications (Section 716: Trenchless Pipe Installation)</li> <li>• The right-of-way shall be returned to a condition which is at least as good as it was before the permitted work took place, in a timely manner. This includes restoration of entrances and side roads</li> <li>• The Utility shall obtain authorization from INDOT to change the design presented in the original permit before proceeding to modify the installation of utilities. The Utility shall submit a set of revised drawings of approved location changes to INDOT's district. The Utility should maintain the as-built plans</li> <li>• The trimming, cutting, spraying or removal of trees and shrubs or other vegetation located within the highway right-of-way shall either be permitted or denied in accordance with the current regulations established by INDOT specifications (Section 200 Earthwork)</li> <li>• Utility tunnels shall be designed so that most repairs or replacement of sections of pipe line can be made without resorting to pulling the entire pipe line</li> <li>• INDOT reserves the right to require installations to be placed in a multi-duct system consisting of two or more inner ducts.</li> <li>• Light poles shall be of single pole construction located as near as practicable to the right-of-way line and, where possible, in protected areas. No light poles will be permitted in the ditch line of any State highway</li> </ul> <p>Only light poles, power lines and communication lines facilities and appurtenances to underground facilities such as regulator vault gauge boxes, highway crossing casing vents, service and system pressure regulator installations and pipeline markers will be allowed above-ground on State highways</p>

Section	Title	Modifications
10-3.04(01)	Utility structures	<p><i>New text:</i> This policy applies equally to all bridges, both proposed and existing</p> <p><i>Deleted text:</i> and/or sign support structure</p>
10-3.04(02)	Highway structures	<p><i>New text (2-a):</i> When a request is made prior to construction of a bridge, suitable conduits may be provided in the structure if the Utility bears the cost of all additional design and construction, and has met all other applicable requirements</p> <p><i>New text (2-e):</i> All requests to attach pipelines to an existing bridge must be accompanied by sufficient information including design details and calculations certified by a professional engineer</p> <p><i>Deleted Text:</i></p> <p>Whenever a utility is located on a highway structure, the Utility company shall submit to INDOT on Utility letterhead, a signed, dated copy of the following statement: I hereby certify that no asbestos containing material was specified as a building material in any construction document for this project. In addition, the Contractor's contract should include the following statement: Before final payment of the contract price, the project engineer will sign and submit to INDOT, on the Contractor's letterhead, a dated copy of the following statement: I hereby certify that to the best of my knowledge no asbestos containing material was used as a building material during this project.</p>
10-3.05(01)	Pipelines/ General	<p><i>New text (2) Manholes, vaults and pits:</i></p> <ul style="list-style-type: none"> <li>• If they should be placed in the roadway, they must be installed outside the normal wheel path. Concrete collars must be placed around manholes in the pavement. These will reduce settlement of the pavement around the manhole and make it easier to mill around them</li> </ul> <p><i>New text (4) Methods of installation:</i></p> <ul style="list-style-type: none"> <li>• Trenchless technologies in accordance with INDOT specifications (Section 716: Trenchless Pipe Installation).</li> <li>• Adequate warning devices, barricades and protective devices must be used in accordance with the approved Traffic Control Plan. Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, concrete barrier rail or other approved devices must be installed for protection of traffic in accordance with INDOT Design Manual (Part Eight: Workzone Traffic Control), INDOT Specifications and the approved Traffic Control Plan.</li> </ul> <p><i>New text (5) Locations:</i></p> <ul style="list-style-type: none"> <li>• longitudinally along the ditch</li> <li>• soft soils subject to excess settlement</li> </ul>

Section	Title	Modifications
10-3.05(02)	High-Pressure Gas and Liquid Petroleum Lines	<p><i>New text:</i> Depth of cover:</p> <ul style="list-style-type: none"> <li>• All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of 36 inches (0.9 m) for encased lines and 36 inches (0.9 m) and non-encased lines.</li> <li>• All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 48 inches (1.2 m) for encased and non-encased lines. Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.</li> </ul>
10-3.05(03)	Low Pressure Gas	<p><i>New text:</i> Depth of cover:</p> <ul style="list-style-type: none"> <li>• All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of 36 inches (0.9 m) for encased lines and 36 inches (0.9 m) and non-encased lines.</li> <li>• All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 48 inches (1.2 m) for encased and non-encased lines. Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.</li> </ul> <p><i>New text:</i> Crossings.</p> <ul style="list-style-type: none"> <li>• A minimum depth of cover is 48 inches (1.2 m) from the surface</li> </ul> <p><i>New text:</i> Plastic lines</p> <ul style="list-style-type: none"> <li>• This excludes service lines 2 inches (0.05 m) or lower in diameter</li> </ul>
10-3.05(04)	Water lines	<p><i>New text:</i> Depth of cover:</p> <ul style="list-style-type: none"> <li>• All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of 36 inches (0.9 m)</li> <li>• All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 4 ft (1.2 m). Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.</li> <li>• All lines must have a minimum depth of cover of 48 inches (1.2 m) under ditches</li> </ul>

Section	Title	Modifications
10-3.05(04)	Water lines (cont)	<p><i>New text:</i> Crossings.</p> <ul style="list-style-type: none"> <li>• All crossings under the roadway and within 5 ft (1.5 m) of the roadway must be encased, except service lines of 2 inches (0.05 m) diameter or less.</li> </ul> <p><i>New text:</i> Plastic Lines.</p> <ul style="list-style-type: none"> <li>• This excludes service lines 2 inches (0.05 m) or lower in diameter.</li> </ul> <p><i>New text:</i> Fire Hydrant Location Markers. The installation of blue markers in accordance with IMUTCD to delineate the locations of the fire hydrants may be allowed by permit. The installation and maintenance of these markers is the sole responsibility of the Utility</p>
10-3.05(05)	Sanitary sewer lines	<p><i>New text:</i> Depth of cover</p> <ul style="list-style-type: none"> <li>• All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of 36 inches (0.9 m).</li> <li>• All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 4 ft (1.2 m). Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.</li> <li>• All lines must have a minimum depth of cover of 48 inches (1.2 m) under ditches.</li> </ul> <p><i>New text:</i> Crossings</p> <ul style="list-style-type: none"> <li>• Lines to be operated under pressure or which do not conform to the material, strength or cover depths contained herein must be encased under the roadway and within 5 ft (1.5 m) of the roadway. Encasement under entrances may be omitted in consideration of the type and amount of traffic, depth, condition and maintenance responsibility. A gravity sewer line would not be encased</li> </ul>
10-3.06(01)	Overhead and communication lines	<p><i>New text:</i> Location</p> <ul style="list-style-type: none"> <li>• In rural areas and at uncurbed sections in urban areas, poles supporting longitudinal lines shall be located on a uniform alignment as close to the right-of-way line</li> </ul>

Section	Title	Modifications
10-3.06(01)	Overhead and communication lines (cont.)	<p><i>New text:</i> Clear Roadside</p> <ul style="list-style-type: none"> <li>• All new utility pole installations and other above ground obstructions shall be located outside of the appropriate clear zone (see the INDOT’s Design Manual -Chapter Forty-Nine: Roadside Safety/Clearzone Concept). Existing installations must be relocated to outside of the clear zone (see the INDOT’s Design Manual -Chapter Forty-Nine: Roadside Safety/Clearzone Concept), when they are found within the project limits of any highway construction contract.</li> </ul> <p><i>New text:</i> Ground Mounted Appurtenances</p> <ul style="list-style-type: none"> <li>• Ground mounted pedestals or other appurtenances must be located at or near the right-of-way line. Ground mounted appurtenances shall be provided with a vegetation-free area extending one foot beyond the appurtenance in all directions. The housing for ground mounted appurtenances shall be painted an inconspicuous color.</li> </ul>
10-3.07	Underground power lines	<p><i>New text:</i> Depth of cover</p> <ul style="list-style-type: none"> <li>• All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of 36 inches (0.9 m) for encased lines and 36 inches (0.9 m) for non-encased lines.</li> <li>• All lines which are under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 48 inches (1.2 m) for encased and non-encased lines. Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.</li> </ul>

Section	Title	Modifications
10-3.07	Underground power lines (cont)	<p><i>New text:</i> Location and installation</p> <ul style="list-style-type: none"> <li>• Underground lines to be installed across any existing roadway must be installed by trenchless technologies in accordance with INDOT Specifications (Section 716: Trenchless Pipe Installation). When installed by jacking or boring, encasement may be required. Bore pits should generally be located as required in Section 10-3.03(07) Item No. 7. Adequate warning devices, barricades and protective devices must be used in accordance with the approved Traffic Control Plan. Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, concrete barrier rail or other approved devices must be installed for protection of traffic in accordance with INDOT Design Manual (Part Eight: Workzone Traffic Control), INDOT Specifications and the approved Traffic Control Plan. Bore pits must be located and constructed to not interfere with highway structural footings. Shoring must be used if necessary. <p><i>New text:</i> Ground Mounted Appurtenances</p> <ul style="list-style-type: none"> <li>• Ground mounted pedestals or other appurtenances must be located at or near the right-of-way line. Ground mounted appurtenances shall be provided with a vegetation-free area extending one foot beyond the appurtenance in all directions. The vegetation-free area may be provided by an extension of the mounting pad, or by heavy duty plastic or similar material. The housing for ground-mounted appurtenances shall be painted an inconspicuous color.</li> </ul> </li></ul>
10-3.08	Underground communication lines	<p><i>New text:</i> Depth of cover</p> <ul style="list-style-type: none"> <li>• All lines that are not under or within 5 ft (1.5 m) of the roadway must have a minimum depth of cover of 36 inches (0.9 m).</li> <li>• All lines which are under or within 5ft (1.5 m) of the roadway must have a minimum depth of cover under the pavement surface of 48 inches (1.2 m) for encased and non-encased lines. Further, all lines must be a minimum of 24 inches (0.6 m) or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater.</li> </ul> <p>All lines must have a minimum depth of cover of 48 inches (1.2 m) under ditches</p>

Section	Title	Modifications
10-3.08	Underground communication Lines (cont)	<p><i>New text:</i> Location and Installation</p> <ul style="list-style-type: none"> <li>• Underground lines to be installed across any existing roadway must be installed by trenchless technologies in accordance with INDOT Specifications (Section 716: Trenchless Pipe Installation). When installed by jacking or boring, encasement may be required. Bore pits should generally be located as required in Section 10-3.03(07) Item No. 7. Adequate warning devices, barricades and protective devices must be used in accordance with the approved Traffic Control Plan. Where circumstances necessitate the excavation of a bore pit closer to the edge of pavement than established above, concrete barrier rail or other approved devices must be installed for protection of traffic in accordance with INDOT Design Manual (Part Eight: Workzone Traffic Control), INDOT Specifications and the approved Traffic Control Plan. Bore pits must be located and constructed to not interfere with highway structural footings. Shoring must be used if necessary. <p><i>New text:</i> Ground Mounted Appurtenances</p> <ul style="list-style-type: none"> <li>• Ground mounted pedestals or other appurtenances must be located at or near the right-of-way line. Ground mounted appurtenances shall be provided with a vegetation-free area extending one foot beyond the appurtenance in all directions. The vegetation-free area may be provided by an extension of the mounting pad, or by heavy duty plastic or similar material. The housing for ground-mounted appurtenances shall be painted an inconspicuous color.</li> </ul> </li></ul>
10-3.09	Irrigation and Drainage Pipes, Ditches and Canals	<p><i>New text:</i></p> <ul style="list-style-type: none"> <li>• Irrigation and drainage facilities installed across any highway right-of-way must be designed, constructed and maintained in accordance with INDOT standards for culverts or bridges</li> </ul>
10-3.10 (01)	Miscellaneous /General	<p><i>New text:</i> Preservation, Restoration and Cleanup</p> <p>Restoration methods must be in accordance with INDOT specifications and/or any special provisions contained in the approved work plan.</p>

Section	Title	Modifications
10-3.10 (01)	Miscellaneous /General (cont.)	<p data-bbox="537 240 972 272"><i>New text:</i> Safety and convenience</p> <ul data-bbox="583 285 1969 1174" style="list-style-type: none"> <li data-bbox="583 285 1969 532">• All construction and maintenance operations must be planned with full regard to safety and to minimize traffic interference. On heavily traveled highways, construction operations interfering with traffic should not be allowed during periods of peak traffic flow. Any such work must be planned so that closure of intersecting streets, road approaches, traffic lanes, or other access points is minimized. In accordance with INDOT Design Manual Chapter 82 (Traffic Control Plan), a traffic control plan must be prepared and submitted with the permit application.</li> <li data-bbox="583 545 1969 829">• Servicing, Maintenance and Repairs. All utility facilities must be maintained in good repair both structurally and aesthetically. The utility use and occupancy agreement will identify the maintenance operations which are permitted and indicate situations where prior notification to INDOT is required. Maintenance of those facilities crossing limited access highways shall be from city streets, county roads, service roads, and approved openings provided in limited access right-of-way fences unless such alternatives are not practical. If maintenance is required within limited access right-of-way, a prior permit will be obtained from INDOT.</li> <li data-bbox="583 842 1969 959">• The Utility is responsible to assure that the work site is secure against any hazard to the public at all times until all of the work is completed. The Utility must comply with INDOT Standards Specifications (Section 100: General Provisions)</li> <li data-bbox="583 972 1969 1174">• The Utility should obtain environmental permit to assure that proper erosion control and storm water management measures are implemented at all times during work operations in accordance with INDOT Standards Specifications (Section 100: General Provision). The Utility shall also be responsible for providing erosion control and storm water management measures to protect all restored areas upon completion of the project until the replacement vegetation achieves sustained growth</li> </ul>

Section	Title	Modifications
10-3.10 (01)	Miscellaneous / General (cont.)	<p><i>New text:</i> Safety and convenience (cont.)</p> <ul style="list-style-type: none"> <li>• All pipe, conduit, wire, poles, cross arms or other materials distributed along the highway prior to installation shall be placed at least 30 ft (9 m) beyond the edge of the travel ways or behind existing guard rails.</li> <li>• Utility construction or maintenance operations on State highway right-of-way may be required to be discontinued during periods of inclement weather or when soil conditions are such that the utility work would result in extensive damage to the highway right-of-way.</li> </ul>
10.3.10(02)	Trenching and backfilling	<p><i>Deleted text:</i> Backfill for trenches in the roadway, or within 1.5 m of pavement, paved shoulders, sidewalks, curbs, gutters or similar structures, must consist of B borrow or other suitable material approved by the regulatory investigator and compacted in accordance with the <i>INDOT Standard Specifications</i> for pavement patching.</p> <p><i>New text:</i> All backfill, whether on or off the roadway, must be in accordance with the <i>INDOT Standard Specifications</i> (Section 715.08: Backfilling).</p>
10-3.10(03)	Underground plant protection	<p><i>New text:</i> Indiana law requires that underground utilities should subscribe to the Indiana Underground Plant Protection Service (IUPPS).</p>
10-3.10(04)	Pavement cuts	<p><i>Deleted text:</i></p> <p>The limits of the pavement patch must extend at least 600 mm outside the limits of the trench. The edges of the trench must be beveled at least 150 mm. The limits of the patch must have vertical faces and must be saw cut for a clean break. The restored surface must be flush with and sloped at the same rate as the existing surface</p>

Section	Title	Modifications
10-3.10(04)	Pavement cuts (cont)	<p><i>New text</i></p> <p>Any time that a pavement is cut to install, repair or maintain utility lines a "T" section pavement patch is required (as shown in Figures 10-3D and 10-3E) . The T section should extend 2 ft (0.6 m) beyond the open cut on all sides. A 6 inch (0.15m) fillet shall be formed to transition between the new pavement section and the filled trench area. Trench shall be backfilled in accordance with current INDOT specifications. Flowable backfill may be used to fill the trench area. Class C concrete shall be used for the T section patch. Hooked anchor bolts shall be placed 5 ft (1.5 m) on center in accordance with current INDOT standards. The concrete portion of the T patch shall be placed level with the surface of pavements with no asphalt over lays. The concrete portion of the T patch should come to within 2 inches (0.05 m) of the existing pavement surface with 2 inches (0.05 m) of HVAC surface on top to match existing pavement surface</p>
10-3.10(05)	Others	<p><i>New text</i></p> <ul style="list-style-type: none"> <li>• Emergency repairs may be performed within the right-of-way when physical conditions or time considerations prevent application of the usual permit. However, the Utility should notify INDOT about its plans or actions for alleviating dangerous situations, and arrangements made for the control and protection of traffic or pedestrians affected by its proposed operations. A permit application should be filed within 5 working days to cover any emergency repairs.</li> <li>• If a Utility discontinues use of a facility, the facility shall be entirely removed from the right-of-way within sixty days after its use is discontinued. A record of underground utility facilities abandoned in the right-of-way shall be maintained in a Utility's permanent files until the facility is completely removed from the ground.</li> <li>• INDOT reserves the right to inspect all utility installations within highway right-of-way. If any violations or deficiencies are observed, the subsequent inspection costs may be charged to the Utility</li> </ul>

## **4.2 Recommendations**

This study updated INDOT's current UAP based on expert opinion from the transportation officials located in the Midwest and a comparison between INDOT's UAP and the UAPs from other Midwestern states. Due to the regional specificity, this study may not have taken full advantage of advanced UAPs from other regions. For instance, Texas was reported to have a well structured UAP.

New technologies in underground utility construction and rehabilitation such as trenchless technologies and subsurface utility engineering are evolving at a fast pace. It is worthwhile to explore the effects of the application of the UAP when new technologies are utilized. The research team also recommends that INDOT perform a periodic evaluation of the UAP (once in five years or so) in order to determine the applicability of the different provisions and to include the effects of new processes, materials, etc.

## **4.3 Implementation**

The new UAP will be effective once approved by INDOT and the FHWA. For easy access by the individuals in industry, the new UAP will be posted on the INDOT website. The summary of modifications and a comparison table (old UAP versus new UAP) will be also posted on the same website. A joint meeting with the INDOT/Utility Industry Task Force will be scheduled before the final report is submitted to JTRP, in order to present the UAP and to discuss processes for its effective implementation.

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# **APPENDICES**

**Appendix A: Questionnaire**

**Appendix B: Synthesis of UAPs**

## Appendix A: Questionnaire



Joint Transportation Research Program  
**Evaluation, Analysis and Enhancement of INDOT's Utility  
Accommodation Policy (UAP)**  
Project No – SPR 2775

**Principal Investigator:**

Dulcy M. Abraham

**QUESTIONNAIRE FOR FOCUS GROUP**

**Focus Group for Discussion of INDOT's UAP**

**Date: Thursday May 8, 2003**

**Time: 9:00 – 10:30AM**

**Location: Indiana Government Central  
North (IGCN) Room N925**

April 2003

## **Tentative Program**

- 1.** Presentation of the research project. (9:00 am – 9:15 am)
  - a. Scope
  - b. Objectives
  - c. Schedule
- 2.** Instructions for break-out groups (9:15 am – 9:30 am)
- 3.** Discussion of the questionnaire and responses (9:30 am – 9:50 am)
- 4.** Identification of the critical issues in the existing UAP (9:50 am – 10:10 am)
  - a. Management issues
  - b. Legal Issues
  - c. Technical issues
  - d. Others
- 5.** Suggestions to improve the existing UAP (10:10 am – 10:25 am)

**Evaluation, Analysis and Enhancement of INDOT's Utility Accommodation  
Policy (UAP)  
Project No – SPR 2775**

**General Information**

1) Company – Agency: \_\_\_\_\_

2) Role of respondent in the company/agency: \_\_\_\_\_

3) Type of activities

- |                                 |                                      |   |
|---------------------------------|--------------------------------------|---|
| <input type="checkbox"/> Design | <input type="checkbox"/> Consulting  | <input type="checkbox"/> Utility Contractor |
| <input type="checkbox"/> Owner  | <input type="checkbox"/> Other _____ |   |

4) Area of expertise (Please select all that apply)

- |                                    |   |  |
|------------------------------------|---|--|
| <input type="checkbox"/> Electric  | <input type="checkbox"/> Telephone          | <input type="checkbox"/> Gas           |
| <input type="checkbox"/> Water     | <input type="checkbox"/> Sewer              | <input type="checkbox"/> Cable TV      |
| <input type="checkbox"/> Pipe line | <input type="checkbox"/> Telecommunications | <input type="checkbox"/> Others: _____ |

5) Size of the company/agency (Sales in the year 2002 – US\$)

- |   |   |
|---|---|
| <input type="checkbox"/> < 1,000,000            | <input type="checkbox"/> 1,000,000-10,000,000 |
| <input type="checkbox"/> 10,000,001-100,000,000 | <input type="checkbox"/> >100,000,000         |

6) Number of utility projects executed for INDOT within the last 5 years

- |                                |                               |                                |
|--------------------------------|-------------------------------|--------------------------------|
| <input type="checkbox"/> 0-5   | <input type="checkbox"/> 6-10 | <input type="checkbox"/> 11-20 |
| <input type="checkbox"/> 21-50 | <input type="checkbox"/> > 50 |                                |

7) Are you currently working on a utility project for INDOT?

- Yes     No

**SPECIFIC QUESTIONS REGARDING THE CURRENT UAP**

1. Are you familiar with the Indiana Department of Transportation’s Utility Accommodation Policy?

Yes  No

If your response is **No**, please list any other Utility Accommodation policies that you are familiar with

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2. How frequently do you use the current UAP?

0-25% 26-50% 51-75% 76-100%

3. Are the definitions listed in the current UAP comprehensive?

Yes  No

If **No**, please describe what definitions are lacking in the current policy?

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4. Are all the possible utilities included in the actual UAP?

Yes  No

If **No**, please mention the utilities that are not included:

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5. What are the major issues in the implementation of the actual UAP?

Please group these issues in the following categories:

Management: \_\_\_\_\_

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Operational: \_\_\_\_\_

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Legal: \_\_\_\_\_

\_\_\_\_\_

Others: \_\_\_\_\_

\_\_\_\_\_

6. Are the existing processes to obtain utility permits efficient?

Yes  No

If **No**, please make recommendations to improve the processes

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

7. Is it possible to find conflicts in the installation of different utilities applying the actual UAP?

Yes  No

If **Yes**, please explain the conflicts encountered

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

8. Does the current UAP define clearly the procedure to follow when utilities need to be relocated?

Yes  No

If **No**, please explain:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

9. The increasing number of abandoned facilities is a growing concern for officials. What aspects must be taken into consideration to create a procedure of action after encountering abandoned facilities?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

10. Are the guidelines provided for encasement of underground utilities in the current UAP comprehensive? If not, please explain major issues that need to be improved

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11. Does the current UAP incorporate the use of novel technologies (such as SUE, Trenchless Technologies, GPS, etc.) ?

- Yes    No

If **No**, please list technologies needed to be incorporated:

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12. When developing a sample of typical cross section depicting the location of utilities within ROWs, what components need to be addressed in order to obtain such a schematic?

- Distance from ROW
- Distance from edge of pavements
- Side ditches
- Distance between utilities
- Overhead utilities
- Depth of utility from the surface
- Terrain Conflicts (i.e., dense vegetation, boulders, man made obstacles)
- Other (please explain)

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13. What systems does your agency/company use in assessing information about utilities and managing utilities? (e.g., paper drawings, CAD, GIS, etc.)

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**MISCELLANEOUS INFORMATION**

1. Contact Information of Respondent:

Name: \_\_\_\_\_  
Telephone: \_\_\_\_\_  
Fax: \_\_\_\_\_  
E-mail: \_\_\_\_\_

Appendix B: Synthesis of UAPs

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
<b>Introduction</b>	Purpose		Control the utility occupancy of all public highways rights-of-ways (ROW). Regulation of the appearance, safe operation and maintenance of the highway.	Regulate the accommodation within state trunkline highway ROW of private lines and utility facilities	The UAP discusses the Department's policy for utility facility installations within road and street ROW limits	The purpose of this policy is to set forth the conditions under which utility facilities may be accommodated on State Highway rights of way
	Objective		To develop and preserve a safe roadside and to minimize possible interference and impairment of the highway, its structures, appearance, safe operation, construction and maintenance	The Department will provide for the regulation or rearrangement of utility installations that interfere with the operation, maintenance, or improvement of state highways and will regulate the installation of any new facilities on highway ROW	To prescribe the policies and conditions for accommodating utility facilities within the ROW limits of the roads and streets within the Kentucky State Highway System.	The Ohio Department of Transportation has the responsibility to maintain the rights of way of highways under its jurisdiction as necessary to preserve the integrity, operational safety, and function of the highway facility
	Application		All public and private utilities (electric power, telephone, telegraph, cable television, water, gas, oil, petroleum products, steam, chemicals, sewage, drainage, irrigation and similar - WITHIN the ROW - Underground, surface or overhead	Telegraph, telephone, power, other public utility companies, cable television, pipe lines, conduits, sewers		
	Scope		For use in regulating the location, design and methods for installing, adjusting, accommodating and maintaining utilities on highway ROW	The policy shall be the basis for the evaluation and consent by the Department to requests to construct, maintain or operate upon, over, across, or under state trunkline highways. This policy is applicable only to state trunkline highways, i.e., those highways under the jurisdiction of the Michigan Department of Transportation		This policy applies to all utilities which are constructed, adjusted, or relocated on or across ROW under the jurisdiction of the Department
	Other requirements		All utility installations and construction must comply with the current UAP - Other specifications (Indiana) and FHWA	AASHTO publications: A policy on the accommodation of Utilities within freeway ROW and A guide for accommodating utilities on highway ROW		AASHTO. In case of conflict with these (AASHTO publications), the guidelines set forth in this policy shall apply
	Exceptions		Authorization from the Chief Engineer for Indot - All the exceptions should include an evaluation of the direct and indirect effects			This policy provides for uniform practices throughout the State for the accommodation of utilities and recognizes the need for special consideration of unusual or hardship situations
	Prior Instructions		This policy supersedes and replaces all policies which are in conflict			
			Financial responsibility		The policy is not intended to serve as the basis for determining financial responsibility for replacing or adjusting facilities	
		Legal Authority		The Department authority with respect to the state trunkline highway system emanates from the State Constitution and various acts.		
<b>Definitions</b>	Definitions	Terms not included in INDOT's UAP (except Indiana). Some states included abbreviations	Utility, low volume highways, highway utility unit, permit unit, relocation permit, ROW permit, high and low pressure gas, Pavement structure, highway street or road, roadway	AASHTO, FHWA, freeway, private lines, ROW, state trunkline highways,	No definitions available	AASHTO, aesthetic quality, ANSI, ASTM, augering, Average daily traffic, backfill, bedding, border area, boring, cap, carrier, casing, CFR, clear zone, coating, conduit or duct, control of access, cover, cradle, direct burial, directional bore, driving, encasement, encroachment, FWHA, flexible pipe, gallery, jacking, manhole, median, normal, oblique, pipeline, plowing, rigid pipe, roadside, safety rest areas, scenic overlook, semi rigid pipe, service lines, shoulder, slab, sleeve, yield strength traveled way, tunnel, unprotected, vent
<b>General</b>	Permits		INDOT requires a ROW permit for each point or area of use by a utility facility. Two major categories: <b>Utility initiated</b> (when a utility wants to install new facilities within highway ROW. The utility must obtain the permit. A fee is charged for the permit) and <b>Highway initiated</b> ( when utility must be relocated or adjusted to accommodate proposed highway construction, reconstruction or maintenance The work is coordinated by INDOT. Identification of utilities: design stage. ) The utility must identify and obtain any other necessary permits or authorizations for the installation	All installation, operation, and maintenance of private lines and utility facilities made on state trunkline highway ROW shall be subject to the consent of the Department. It is responsibility of the party requesting use of the trunkline ROW to apply for and obtain the necessary permits from the Department.	Any utility company, firm, individual or governmental agency that wants to perform any type of work or activity other than "routine maintenance" on the ROW of any road or street within the Kentucky State Highway System must obtain a permit from the Department of Highways. Applications must be made in the name of the owner that will perform the work	Utilities shall obtain permits for the use and occupancy of all highways ROW under jurisdiction of ODOT. Before a municipality issues a permit for any use or occupancy of a State highway with limited access ROW, the application must be reviewed and approved by the ODOT. Utilities are required to obtain permits from ODOT for installations or removals of overhead utilities, underground installations, either temporary or permanent
		Permit Characteristics		Specifications for and methods of installation, requirements for preservation and restoration of highway facilities, appurtenances, and natural features and vegetation on the ROW, and limitations on the activities within the ROW will be prescribed within the conditions of the permit as determined necessary by the Department		

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
		Responsibility for permits				The District Deputy Director shall be responsible for: receiving applications for permits, reviewing the applications and plan to insure conformity to regulations, issuing of permits, inspecting construction to insure conformity to the permit, maintaining records of all applications and permits. The utility company is responsible to have a copy of the approved permit at the job site
		Conditions-Permits I				No excavation shall be made or obstacles placed within the limits of the highways, take proper care of drainage, all the work shall be done under supervision and to satisfaction of ODOT and the <b>entire expense shall be borne by the party to whom the permit is issued</b> , all parts of the highway shall be left in an acceptable condition, the State can appoint an inspector over the work and any compensation arranged for shall be paid wholly by the permit holder, a performance bond may be a pre-requisite to the issuance of a permit
		Conditions-Permits II				The party to whom the permit is issued shall be responsible for all damages to persons or property due to or resulting from any work done under the permit, a permit may at any time, be revoked or annulled by the District Deputy Director for noncompliance with any of the conditions, restrictions, and regulations,
		Conditions-Permits III				The following utility permit requests must be submitted for review prior to the issuance of a permit: utility permits involving the use or occupancy of Interstate ROW, involving the longitudinal use of limited access ROW on highways, requests involving environmental concerns such as groundwater monitoring wells or seismic surveys on highways, utility requests to use or occupy areas of scenic enhancement
		Prior identification of existing utilities				
		Indemnification and Insurance				
		Emergency contingency plan				
		Surety bond I				
		Surety bond II				

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
		Annual Service Connection Permits				
		Exceptions				
	Driveway conflicts		When the work on the drive is initiated by and/or incidental to a highway project, the adjustment or relocation of the utility will be treated like any other highway initiated work. When the work is initiated by a private owner, INDOT is not responsible for identifying or resolving any conflicts between the drive and utilities.			
	Private lines		Longitudinal installations of private lines are not permitted. Crossings of highway ROW by private lines may be allowed subject to INDOT control	All the utilities or private lines shall be used in accordance with the policy		On limited access highways, applications for the longitudinal placement of private lines must conform to the provisions of the UAP. It is required approval from the Administrator of the FHWA
	Service lines		Service lines are a special class of private lines. The sole reason for a service line to be on highway ROW is to facilitate its connection with a public utility. They are permitted on highway ROW whenever practical. The utility must at minimum co-sign any service line permit.			
	Access Control		INDOT has the authority to control and regulate access to all highways under its jurisdiction. Access control generally includes three categories: <b>Non-limited access</b> (This level is typical of most highways with frequent driveways and intersections), <b>Partial limited access</b> (This level is typical of many divided highways with some intersections and driveways) <b>Full limited access</b> (This level is typical of interstate highways and some divided highways)			Permits are required for: Limited access highways, Non-limited access highways, service drops crossing all type of State highways
	Location		Utility lines must be located to avoid or minimize the need for adjustment for future highway improvements and to permit access to the utility lines for their maintenance with minimum interference to highway traffic	Location of facilities will be guided by the AASHTO publication entitled "Guide for selecting, locating, and Designing Traffic Barriers. Facilities allowed on state trunkline highway ROW will be placed in a manner which will not impair the highway or adversely affect highway or traffic safety	Utilities are permitted to cross any road or highway with certain restrictions. When practical, they should generally cross perpendicular to the highway alignment and preferably under the highway. Existing facilities which cross the ROW at a number of points within the same area should be <b>combined</b> , when practical	Utilities should be located to minimize adjustments to accommodate future highway improvements and to permit servicing and upgrading such lines with minimum interference to highway traffic
			Utilities should cross roadways at right angles or as nearly practical right angles	Construction of private lines and utility facilities may be allowed across limited access highways preferably at right angles to and under the roadway. Crossings should be for the purpose of serving a general area rather than providing individual services		To the extent feasible and practicable, utility lines crossing the highway should cross on a line generally normal to the highway alignment
			Underground utility crossings which are encased should be constructed in a manner that allows for replacement of the line within the existing encasement in case of the existing line ruptures	The horizontal and vertical location requirements will be adequate to insure compliance with clear roadside guidelines		The accommodation will not adversely affect the highway and traffic safety
			All supporting structures and above ground appurtenances should be located outside the access control line. Installation and maintenance must be from non-limited access frontage roads. Some exceptions may be allowed (access from median or ROW)			Where frontage roads are provided, utility lines should be located along the frontage roads, outside the limited access lines, to provide service without access from the through traffic roadways or ramps
			Longitudinal installations must be located on uniform alignment as near as practical to the ROW line. Above ground longitudinal installations are not permitted in highway medians	Longitudinal installations on limited access right of way by public utilities and private lines require review and approval by the FHWA		

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
			Longitudinal installations on highways with partial access control are generally discouraged	Occupancy of non-limited access ROW may be allowed based on considerations for traffic safety and necessary preservation of roadside space and aesthetic quality		Any permit application for longitudinal occupancy of a limited access highway with transmission or trunk line utility facilities must be clearly justified due to special and unique circumstances
			Longitudinal installations on highways with full access control are not permitted	Private lines and utility facilities will not be allowed to longitudinally occupy the ROW of controlled or limited access highways without consideration of feasible alternatives		Longitudinal installations should be located on uniform alignment near the ROW line so as to provide a safe environment for traffic operations and preserve space for future highway improvements or other utility installations
			Wireless telecommunications towers may be permitted on highways with partial or full access control			
		Adjacent strip of dedicated land			If a utility company applies for a permit to locate on a highway ROW where there is an adjacent strip of dedicated land, the application should be treated in a routine manner. The Department does not intend to force the use of dedicated strips for utilities in lieu of highway ROW, but it is suggested that the dedicated strips be used instead, without permit from the Department	
		Clear zone				The horizontal and vertical location of utilities within the highway ROW limits should conform with the clear roadside policy to provide a clear zone. The purpose is to provide drivers of errant vehicles which leave the traveled portion of the roadway a reasonable opportunity to stop safely or otherwise regain control of the vehicle
		Bridges				Where other locations are not feasible, bridges may be utilized to support utility facilities
		Fees or Assessments				
		Crossings				
		Scenic restrictions				
		Fiber optic				
		Service connections				
		Warning tape				
		Utility sign markers				
		Existing utilities				
		Subsurface Utility Engineering				

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
		Vertical location				
		Installation - Exception				
	Design		The utility must be responsible for the design of the utility facility to be installed within the highway ROW	The major design considerations are: structural integrity of the highway, the reasonably safe operation and maintenance of the highway, the aesthetic quality of the highway and the reasonable protection of roadside vegetation, and the costs and/or difficulty of highway construction and maintenance	Safety, aesthetics, operational characteristics, and the cost of construction and maintenance of the utility must be considered when determining the effects of utility installations	The utility is responsible for the design of the facility to be installed within the highway ROW or attached to a highway structure. <b>The Department is responsible for review and approval of the utility's proposal</b> with respect to the location of the utility facilities to be installed and the manner of attachment
			Requirements: National Electric Safety Code, American Water Works Association, ANSI, American Petroleum Institute, US Department of Transportation	Those situations for which the FHWA requires and airspace agreement should be reviewed by the FHWA		Requirements: ODOT, National Electrical Safety Code and OSHA, ANSI Standard Code for pressure piping.
			Utility installations with materials designed for a long service life expectancy and relatively free from routine servicing and maintenance			All permanent utility installation on, over, or under highway ROW and attachments to highway structures should be of durable materials designed for long life expectancy and relatively free from routine servicing and maintenance
			Provisions should be made for known or planned expansion of the utility facilities	Provisions should be made for known or planned expansion of the utility facilities	Provisions should be made for known or planned expansion of the utility facilities	Provisions should be made for known or planned expansion of the utility facilities
			Utility lines attached to highway bridges must have shut-off valves			
		Safety / Traffic control		The party requesting consent shall take, provide, and maintain all necessary precautions to prevent injury or damage to persons and property from their operations and shall use traffic control devices which are in accordance with the Michigan Manual of Uniform Traffic Control Devices		The utility is responsible for the development and design of a Maintenance of Traffic Plan anytime its activity will affect the movement of traffic or traffic safety
		Maintenance		Maintenance of those facilities crossing limited access highways shall be from city streets, county roads, service roads, and approved openings provided in limited access ROW fences unless such alternatives are not practical. If maintenance is required within limited access ROW, a prior permit will be obtained from the Department		
		Underground crossings				Underground crossings of all highways shall be made without disturbing existing pavements. Open cut of pavement will not be considered, unless it is demonstrated there is no reasonable alternate method available. Casing, pipe, or conduit crossings of the highway shall be installed by augering, driving, boring, tunneling or jacking without disturbing the pavement or paved shoulders. Water jetting will not be permitted
		Cleanup and restoration				

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
		As-Built Plans				
		Trenching				
		Gravity systems				
		Trees				
		Untrenched construction				
		Non-metallic lines				
<b>Structures</b>	Utility structures		Where it would be more economical to carry one or several utility lines across a highway in a tunnel or on a bridge, consideration should be given to using a separate structure specifically for the utility crossing. The utilities companies are responsible for maintenance, servicing or repair the utility lines	The horizontal and vertical location requirements and clearances for the various types of utilities will be adequate to insure compliance with clear roadside guidelines for the particular highway type involved and shall also be in conformance with current government and industry codes		Tunnels shall be constructed of steel liner plates left in place, or of materials acceptable to ODOT
	Highway structures		The attachment of utility lines to highway bridges and separation structures is discouraged. Exceptions may be permitted (Communication lines, gas and petroleum lines, power lines, water and sewer lines). Any time that an attachment must be relocated to accommodate highway work or safety, the Utility must apply for a new attachment		It is the Department's policy to grant approval of utility installation on bridges only when extensive engineering and economic research shows that all other means of accommodating the utility are not practical	Where it is feasible and reasonable to locate utility facilities elsewhere, attachments to bridge structures should be discouraged and avoided. Exceptions apply
	<i>Structural Analysis</i>		All requests to attach pipelines to an existing bridge must be accompanied by sufficient information to determine the effect of the added load on the structure			The utility installation shall be made in a manner that will not inhibit maintenance, reduce the vertical clearance, or detract the appearance of the structure
	<i>Attachment Details</i>		All requests for attachments must be accompanied by sufficient details of the manner and type of attachment			None of the structural members in the proposed bridge are to be reduced in section / Utility attachments to the outside of the bridge structure will not be permitted / Gas and water mains may be supported by bridges if cut-off valves are provided at readily accessible locations within a reasonable distance from each end of the bridge
	<i>Asbestos Materials</i>		Materials contain asbestos shall not be used on any utility lines attached to a highway structure			
		Application			This policy applies equally to all bridges, both proposed and existing, for all highways on both federal aid and non-federal aid systems. It also applies to the modification of any existing utility installation on any bridge in the state-maintained system	

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98	
Pipelines	General				It is Department's policy not to approve any applications for installations of pipe lines on bridges carrying any combustible material such as gas, petroleum, and similar materials required to be transmitted under pressure	Pipe lines shall be designed to accept internal and external pressure in accordance with the current applicable sections of the Standard Code of Pressure Piping of ANSI; 49 CFR 192, 49 CFR 193, 49 CFR 195. The design shall include resistance to external corrosion with provisions for cathodic protection of metal pipe lines crossings or occupying highway ROW when necessary	
	Methods of protection		All pipelines must provide sufficient strength to withstand internal design pressures. They must meet <b>any other applicable codes or industry standards</b> for the type of pipeline. Highway crossings must generally be encased. Encasement must consist of a pipe or other separate structure around and outside the carrier line			Pipe lines of any type carrying gas or liquid under pressure shall be equipped with valves, which when closed will isolate a section of line including the portion within the highway ROW	
	Manholes, vaults and pits		This type of access must be limited to those necessary for installation and maintenance of underground lines. They must generally not be placed or permitted to remain in place in the pavement or shoulders of any high-volume highway				
	Depth		The depth of underground lines must be as specified herein for each type of utility			Where less than minimum cover is authorized, additional protection such as concrete pad may be required	
	Methods of installation		Underground lines to be installed across any existing roadway must be installed by <b>boring, tunneling or jacking</b> in accordance with INDOT specifications. When installed by jacking or boring, encasement may be required. Adequate warning devices, barricades and protective devices must be used to prevent traffic hazards			When pipe lines must cross existing limited access highways, installation shall be made from points outside the limited access ROW	
	Locations		Unsuitable or undesirable locations must be avoided (i.e., deep cuts, near footings of bridges, across at-grade intersections or ramp terminals, etc)				
	Clearances		Vertical and horizontal clearances between a pipeline and a structure or other highway or utility facility should be sufficient to permit maintenance of the pipeline				
	Materials		All pipelines and casings must provide sufficient strength to withstand the internal design pressure and the dead and live loads of the backfill, pavement structure, and traffic, including construction equipment			Lines crossing under a limited access or non-limited access highway shall be of durable materials designed to meet conditions found at the site	
		Casings		Where casing is used, it must be provided under center medians, from top of backslope to top of backslope for cut sections, 1.5 m beyond the toe of slope under fill sections, 1.5 m beyond face of curb in urban sections and 1.5 m beyond any structure which the line passes under or through. Encasement may be omitted under medians which are substantially wider than normal standards for such roadways.			Casing is required for non-plastic pipe lines less than 16 inches in diameter crossing the highway and carrying liquid petroleum or gas under pressure if the pipe carries an internal pressure in excess of 30% SMYS of pipe. Casing is required for plastic pipe crossing the highway and carrying liquid petroleum or gas under pressure if the internal pressure exceeds 100 psig. On a limited access highway, conduits or casing shall extend across the full width of the ROW. When the highway is constructed in deep cut, the conduit or casing may be terminated beyond the shoulders. Generally, opening the median is prohibited
	High pressure gas and liquid petroleum lines						
	Depth of cover		All lines that <b>are not under or within 1.5m of the roadway</b> must have a minimum depth of cover of 750 mm for encased lines and 900 mm for non-encased lines. All lines that <b>are under or within 1.5m of the roadway</b> must have a minimum depth of cover under the pavement surface of 750 mm for encased lines and 1.2 m for non-encased line. Further, all lines must be a minimum of 450 mm or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater			Under pavement surfaces: 1m ; Under sod ditches: 1m ; Under paved ditch: 0.6m ; Under other surfaces: 0.6m ; Fiber optics: 1.2m	

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
	Crossings		These may be encased or non-encased. However, only welded steel lines with adequate corrosion protection may be used for non-encased highway crossings			
	Vents		One or more vents must be provided for each casing or series of casings. Vents must be placed at the ROW line immediately above the pipeline			
	Markers		The utility must place a readily identifiable and suitable marker immediately above any high-pressure gas or liquid petroleum line where it crosses the ROW line			
	Low-pressure gas					
	Depth of cover		All lines that <b>are not under or within 1.5m of the roadway</b> must have a minimum depth of cover of 750 mm for encased lines and 900 mm for non-encased lines. All lines that <b>are under or within 1.5m of the roadway</b> must have a minimum depth of cover under the pavement surface of 750 mm for encased lines and 1.2 m for non-encased line. Further, all lines must be a minimum of 450 mm or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater			Under pavement surfaces: 1m ; Under sod ditches: 1m ; Under paved ditch: 0.6m ; Under other surfaces: 0.8m ; Fiber optics: 1.2m
	Crossings		These may be encased or non-encased. Non-encased crossings must be welded steel construction with adequate corrosion protection or plastic lines with no joints under or within 1.5m of the roadway			
	Vents		One or more vents must be provided for each casing or series of casings. Vents must be placed at the ROW line immediately above the pipeline			
	Markers		The utility must place a readily identifiable and suitable marker immediately above any low-pressure gas line where it crosses the ROW line			
	Plastic Lines		The maximum size of plastic lines must not exceed industry standards, which is currently 150mm to 200mm. Where plastic pipe is installed without a metallic casing, a metal wire must be installed concurrently or other means provided for detection purposes			
	Location Exceptions		In urban areas, existing longitudinal lines which can be maintained without violating access control and which are not under the pavement or shoulder of any existing roadway or potential future improvements may remain in place provided that all other requirements are met			
	Water lines					
	Depth of cover		All lines that <b>are not under or within 1.5m of the roadway</b> must have a minimum depth of cover of 750 mm. All lines that <b>are under or within 1.5m of the roadway</b> must have a minimum depth of cover under the pavement surface of 1.2 m. Further, all lines must be a minimum of 450 mm or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater			Under pavement surfaces: 1.2m ; Under sod ditches: 1m ; Under paved ditch: 0.6m ; Under other surfaces: 1m ;
	Crossings		All crossings must be encased, except service lines of 50mm diameter or less			

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
	<i>Plastic Lines</i>		Where plastic pipe is installed without a metallic casing, a metal wire must be installed concurrently or other means provided for detection purposes			
	<i>Location Exceptions</i>		In urban areas, existing longitudinal lines which can be maintained without violating access control and which are not under the pavement or shoulder of any existing roadway or potential future improvements may remain in place provided that all other requirements are met			
	<i>Appurtenances</i>		Meter pits, sprinkler pits, regulator pits, and other such features must not be located within highway ROW			
	<i>Drains</i>		One or more drains must be provided for each casing or series of casings. The drains should outlet outside of the roadway area to a natural drainage feature or roadway ditch			
	<i>Markers</i>		The utility must place a readily identifiable and suitable marker immediately above any water line where it crosses the ROW line			
	Sanitary Sewer Lines					
	<i>Depth of cover</i>		All lines that are not under or within 1.5m of the roadway must have a minimum depth of cover of 750 mm. All lines that are under or within 1.5m of the roadway must have a minimum depth of cover under the pavement surface of 1.2 m. Further, all lines must be a minimum of 450 mm or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater			Under pavement surfaces: 1m ; Under sod ditches: 1m ; Under paved ditch: 0.6m ; Under other surfaces: 0.8m ; Fiber optics: 1.2m
	<i>Crossings</i>		Lines to be operated under pressure or which do not conform to the material, strength or cover depths contained herein must be encased. Encasement under entrances may be omitted in consideration of the type and amount of traffic, depth, condition and maintenance responsibility			
	<i>Materials</i>		New and relocated sewer lines may be of any material which has been proven to be of satisfactory strength and durability in local use, provided all other requirements are met			
	<i>Non-Metallic Lines</i>		Where non-metallic lines are installed without a metallic casing, a durable metal wire must be installed concurrently or other means provided for detection purposes			
	<i>Location Exceptions</i>		Except where relocation is necessary to clear existing lines from structures or other highways appurtenances or for other specific reasons, INDOT may permit existing lines to remain in place at any location except longitudinally under through traffic lanes or ramps of limited access highways			
<b>Overhead Power and Communications lines</b>	General					In cases where the required spanning of the roadway is not feasible, consideration should be given to conversion to underground facilities
	<i>Type of Construction</i>		Longitudinal lines shall be limited to single pole construction. Transverse lines shall be limited to single pole construction where practicable,			
	<i>Vertical Clearances</i>		The minimum vertical clearance for overhead communications and power lines above the highway shall not be less than 5.5m, or greater if required by the National Electric Safety Code or other laws and regulations			The vertical clearance of overhead lines crossing limited access or non-limited access highway ROW shall not be less than the minimum required by the National Electrical Safety Code

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
	<i>Location</i>		In rural areas and at uncurbed sections in urban areas, poles supporting longitudinal lines shall be located on a uniform alignment as far from the roadway as possible. At crossings, no poles will be permitted in the center median or more than 900 mm inside the ROW line. As general rule, the horizontal and vertical location of overhead power and communications lines shall provide adequate clearance for construction and maintenance activities	Location of light standards and utility poles on free access roadways will be governed by the current Department guideline		As a general policy, if private access to a highway has been controlled, overhead lines will not be permitted. Longitudinal installations of overhead lines on highway ROW should be limited to single pole type of construction. Joint-use single pole construction is encouraged at locations where more than one utility or type of facility is involved. At interchange areas, supports for overhead utility lines may be permitted within the limited access lines
	<i>Clear Roadside</i>		All new utility pole installations and other above ground obstructions shall be located outside the appropriate clear zone. If the clear zone extends to the ROW line, then no installation will be permitted. Existing installations must be relocated to outside of the clear zone, when they are found within the project limits of any highway construction contract			Within non-limited access highways, structures for the support of overhead utility lines crossing highway ROW may be permitted
		Ground mounted appurtenances				
	Telecommunication towers					
	<i>Applicability</i>		This section applies specifically to telecommunication towers placed within highway ROW as part of resource sharing projects. These towers will typically occupy space within Interstate/limited access ROW. Towers that are not part of a resource sharing project will not be permitted to occupy Interstate/limited access ROW. A resource-sharing project is herein defined as a project undertaken by the State of Indiana and a telecommunication provider to achieve common goal of meeting each other's communication needs			
	<i>Location</i>		The tower shall be located outside the clear zone and where it is unlikely to be struck unless shielding already exists. Desirable distance 25m. Vehicle access to the tower site can be obtained from outside the limited access control roadway.			
	<i>Multiple providers</i>		Multiple telecommunications providers will be allowed on a tower. However, only one provider will maintain the tower structure and all attachments			
<b>Underground power lines</b>	<i>Depth of cover</i>		All lines that <b>are not under or within 1.5m of the roadway</b> must have a minimum depth of cover of 750 mm for encased lines and 900mm for non-encased lines. All lines that <b>are under or within 1.5m of the roadway</b> must have a minimum depth of cover under the pavement surface of 750mm for encased lines and 1.2m for non-encased lines. Further, all lines must be a minimum of 450 mm or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater			No facilities will be permitted within the area from the edge of pavement and the outer extremities of highway signing; No facilities will be permitted on slopes which are steeper than 4 to 1 ratio; No facilities will be permitted within the median; All facilities will have a minimum cover of 1.2m (4 feet) ; Under pavement surfaces: 1m ; Under sod ditches: 1m ; Under paved ditch: 0.6m ; Under other surfaces: 0.8m ; Fiber optics: 1.2m
	<i>Crossings</i>		Underground power lines operating at 600 volts or less may be encased or non-encased provided the installation complies with the depths of cover specified herein. Lines operating above 600 volts must be encased. Encasement, where used, may be metallic or nonmetallic			
	<i>Markers</i>		The Utility must place a readily identifiable and suitable marker immediately above any underground power line where it crosses the ROW line			
	<i>Location and Installation</i>		Longitudinal lines may be placed by plowing or open trench method and must be located on uniform alignment as near as practical to the ROW line. Underground power lines must not be placed longitudinally beneath the median or beneath through traffic roadways including shoulders. Underground lines to be installed across any existing roadway must be installed by boring, tunneling or jacking in accordance with INDOT specifications. When installed by jacking or boring, encasement may be required.			
	<i>Appurtenances</i>		Above ground pedestals or other appurtenances must be located at or near the ROW line			
	<i>Manholes, vaults and pits</i>		This type of access point must be limited to those necessary to install any service the line and must be directly in line with the utility facility.			

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
Underground Communications Lines	Depth of cover		All lines that are not under or within 1.5m of the roadway must have a minimum depth of cover of 750 mm. All lines that are under or within 1.5m of the roadway must have a minimum depth of cover under the pavement surface of 750mm for encased lines and 1.2m for non-encased lines. Further, all lines must be a minimum of 450 mm or one half the diameter of the pipe or casing beneath the pavement structure, whichever is greater			Under pavement surfaces: 1m ; Under sod ditches: 1m ; Under paved ditch: 0.6m ; Under other surfaces: 0.8m ; Fiber optics: 1.2m
	Crossings		Lines crossing highways do not require encasement except where in the judgment of INDOT it is necessary for the protection of the highway or utility facility. Encasement, where used, may be metallic or nonmetallic			
	Markers		The Utility must place a readily identifiable and suitable marker immediately above any underground power line where it crosses the ROW line			
	Non-Metallic Lines		Where non-metallic lines are installed without a metallic casing, a durable metal wire must be installed concurrently or other means provided for detection purposes			
	Location and Installation		Longitudinal lines may be placed by plowing or open trench method and must be located on uniform alignment as near as practical to the ROW line. Underground lines to be installed across any existing roadway must be installed by boring, tunneling or jacking in accordance with INDOT specifications. When installed by jacking or boring, encasement may be required.			
	Appurtenances		Above ground pedestals or other appurtenances must be located at or near the ROW line, well outside the highway maintenance operation area			
	Manholes, vaults and pits		This type of access point must be limited to those necessary to install any service the line and must be directly in line with the utility facility.			
Irrigation and drainage pipes, ditches and canals			Irrigation and drainage facilities installed across any highway ROW must be designed and constructed in accordance with INDOT standards for culverts or bridges. Longitudinal ditches and canals which would closely parallel the highway must not be permitted within the clear zone which would constitute a hazard to traffic			
Miscellaneous	General		Various types of utility lines not specifically covered herein must be considered with the provisions of this policy in accordance with the nature of the line			
	Preservation, restoration and cleanup		The area disturbed by utility installations or relocations should be minimized. The utility should not spray, cut or trim any tree unless written permission by INDOT. All debris, refuse and waste must be removed from the site. Care must be taken to avoid disturbing existing drainage facilities			
	Safety and Convenience		Traffic controls for utility construction and maintenance operations must conform with the Indiana Manual on Uniform Traffic Control Devices. All construction and maintenance operations must be planned with full regard to safety and to minimize traffic interference. All utility facilities must be maintained in good repair both structurally and aesthetically			
	Records		The utility must maintain records that describe the utility usage, size, configuration, material, location, height or depth and any special features such as encasement, manholes and valves			
	Construction Identification		When it is likely that construction or maintenance activities could involve existing utilities, it is often desirable to locate and identify these facilities well in advance of the initiation of the work as an aid to both design and construction. (There is a uniform color code system)			
	of Utilities Trenching and backfill		The essential features for trench and backfill construction are: restoration of the structural integrity of entrenched roadbed; security of the pipe against deformation likely to cause leakage; assurance against the trench becoming a drainage channel			

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
			Trenches must be cut with vertical faces. They must be shored where necessary. Bedding must be provided to a depth of 150mm or half the diameter pipe, whichever is less. Bedding must consist of pit run sand and gravel mixture. Backfill for trenches in the roadway must consist of B borrow or other suitable material approved by the regulatory investigator			
			Backfill for trenches outside of the roadway may consist of the excavated material			
	Underground Plant		<b>Desirably</b> , underground utilities should subscribe to the Underground Plant Protection Service. Doing this ensures protection of the Utility's facilities because it is required by law that UPP is called at least two days prior to any excavation work. It is desirable that the Utilities locate their facilities for survey work.			
	Protection Pavement cuts		Open cutting of the pavement to install utility facilities is highly discouraged. The Utility will be required to provide written documentation and justification for an open cut. The limits of the pavement patch must extend at least 600mm outside the limits of the trench			
Other		Other uses of the trunkline		Use of state trunkline ROW for any purpose will require prior Department approval		
		Emergency operations		In time of disaster or emergency, or when utility lines or facilities are so damaged as to constitute a danger to life and property of the public, access to the same may be had by the most expeditious route and the work is to be done in a manner which will provide the traveling public with maximum possible safety		A permit is not required for work considered emergency maintenance of utility facilities when damaged by a vehicle or weather related causes on non-limited access highways. In all work performed on highway ROW by or for the utility, the utility is responsible for installing and maintaining traffic control devices
		Closing		This statement of policy and procedure will not be interpreted or applied in a manner in violation of, or inconsistent with state law		
		Obligation to remove, relocate or modify				
		Apportionment of Costs				
		Construction and maintenance activities				
		Abandoned facility				
		Failure to comply				
		Inspection				

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
		Environmental conditions				
		Work site safety				
		Erosion control and storm water management				
		Fire Hydrant Location Markers	refer to 10-3.10(01) General		The installation of blue raised pavement markers to delineate the locations of the fire hydrants may be allowed by permit. The installation and maintenance of these markers is the sole responsibility of the applicant	
	Others from Utility installation details	Galleries	10-3.05(04) Water Lines (newly included) refer to 10-3.03(07) Design (newly included)			Galleries shall be designed so that most repairs or replacement of sections of pipe line can be made without resorting to pulling the entire pipe line. The gallery design shall include one or more entrance shafts of a size suitable for removal of one pipe section from the gallery. When used, galleries shall extend across the full width of the ROW
		Access for servicing utilities	Refer to section - 10-3.03(05) Access Control			Access for servicing a utility along or across a limited access highway shall normally be restricted to private easements, frontage roads where provided, or nearby adjacent public roads
		Scenic enhancement	10-3.03(06) Location includes some statements  (newly included)			The type and size of utility facilities can alter the visual quality and view of highway roadsides and adjacent areas. Restrictions: <b>Underground installations</b> may be permitted where they do not require extensive removal or alteration of terrain features. <b>Aerial Installations</b> will be made at a location that will employ suitable designs and materials which give the greatest weight to the aesthetic qualities of the area being traversed
		Light poles	refer to 10-3.03(07) Design (newly included)			
		Above ground facilities (Other Utilities)				
		Track and Rail facilities	refer to 10-3.03(07) Design (newly included)			
		Boring or jacking				
		Boring - Spec				
		Material storage on ROW	refer to 10-3.10(01) General			

Chapter	Components (INDOT)	Components (Other UAP's)	Indiana	Michigan February 25/1986	Kentucky 9-Sep-99	Ohio Apr-98
		Operational Restrictions				
		Vegetation Control	refer to 10-3.10(01) General			
		Application Denial, Revocation and Sanctions				
		Sanctions	Refer to 10-3.03(01) Permits (newly included)			
		Incompatibility	Refer to 10-3.03(01) Permits (newly included)			
		Change of ownership or owner's identity or legal status				
		Multi-Duct System	Refer to 10-3.03(01) Permits (newly included) refer to 10-3.03(07) Design (newly included)			
		Private Utility Facilities	Because private lines serve only the owner, it is generally not in the public interest for them to be located within highway right-of-way. Longitudinal installations of private lines are not permitted. Exceptions may be made in accordance with Section 10-3.01(05) where a public interest can be demonstrated. Crossings of highway right-of-way by private lines may be allowed subject to INDOT control. Private line installations must conform to all other applicable requirements contained herein.			

Appendix B: Synthesis of UAPs

Chapter	Components (INDOT)	Components (Other UAP's)	Illinois Feb-92	Minnesota July 27 1990	Wisconsin 1-Jan-00	Tennessee Feb-03
<b>Introduction</b>	Purpose		The purpose is to establish policies and procedures for accommodating utilities on ROW of the Illinois State Highway System	These procedures apply to all trunk highways under the jurisdiction of the Minnesota Commissioner of Transportation	The purpose of the UAP is to prescribe the policies and procedures that shall be met by any utility whose facility currently occupies, or will occupy in the future, any highway ROW or bridge over which the Department has jurisdiction	Rules and regulations set forth herein have been prepared with the thought of accommodating utility facilities and at the same time maintaining the integrity, operational safety and function of the highway facility
	Objective		Provide public benefit consistent with the preservation of the integrity, safe usage, and visual qualities of the State Highway System	The procedures allow utilities to be accommodated, adjusted or relocated within the right of way of highways under the jurisdiction of the Commissioner of Transportation, when legally entitled to use public highways.	The permitted use and occupancy of highway ROW for non-highway purposes is subordinate to the primary interests and safety of the traveling public	
	Application		This policy applies to all utility facilities on public highway ROW in which the Department has an interest, whether those facilities are permitted or not and whether those facilities were in place before or after promulgation of this policy	The procedures apply to all utility facilities, including any privately, publicly or cooperative owned line. The procedures apply to underground, surface and overhead placement, either singly, jointly or in combination including bridge attachments. Examples of utilities: electric transmission, telephone or telegraph lines, poles lines, community antenna television, railways, ditches, sewers, water, heat or gas mains	The policy applies to all public and private utilities. It also applies to all existing utility facilities retained, relocated, replaced, or altered, and to new utility facilities installed on Department ROW	Rules and regulations set forth herein shall apply to all publicly, privately or cooperatively owned utilities for producing, transmitting or distributing electric power, light, communications, water, gas, oil, crude products, steam, chemicals, sewage, storm drainage, irrigation structures and ditches that are to be located, adjusted and/or relocated either overhead or under ground within ROW of highways which compose the state
	Scope			The procedures concern the location and manner by which utility installations are to be made, not only within the right of way of Trunk Highways, but also local roads and streets (where federal-aid is to be used), and the measures to be taken by highway authorities to preserve and protect the integrity and visual qualities of the highway and the safety of the highway traffic		Rules and regulations set forth herein are limited to the Department of Transportation's responsibility for preserving the integrity of the highway and its safe and efficient operation
	Other requirements		AASHTO, FHWA, Federal-Aid Highway program, Institute of Electrical and Electronics Engineers, The American Society of Mechanical Engineers, The Associated General Contractors of Illinois, Office of Pipeline Safety Operations, Office of Federal Register			It is not intended that these rules and regulations be retroactive but shall be effective on the date they are officially issued
	Exceptions				Highway facilities (e.g. lighting, traffic signals, changeable message boards) operated by the Department for the purpose of ensuring motorist safety shall not be bound by the policies included in this UAP	
	Prior Instructions					
			Financial responsibility Legal Authority			
<b>Definitions</b>	Definitions	Terms not included in INDOT's UAP (except Indiana). Some states included abbreviations	ANSI, applicant, backfill, boring, carrier pipe, casing, clear zone, coating, conductor, conduit, cover, disrupt the ROW, encasement, expanding areas, extra heavy pipe, facility, frontage road, fully access-controlled highway, immediate, jacking, jetting, joint use, occupancy, overlook, pavement cut, pressure, rest area, restoration, ROW, scenic easement, shoulder, sound engineering judgment, spur track, travel line, trench, vent, wet boring	Backfill, carrier, casing, clear zone, coating, conduit or duct, controlled access highway, depth, direct burial, drain, encasement, encroachment, environmentally sensitive areas, fiber optic cable, flexible pipe, freeway, frontage road, gallery, grout, jacket, manhole, median, normal, pipe, pipeline, plowing, pressure, private lines, ROW, roadside, safety rest area, scenic overlook, scenic quality, sleeve, specimen trees, trenched, trunk highways, untrenched, vent	clear zone, emergency utility work, expressway, freeway, pipeline, private utility facilities, responsible person, ROW, applicant, traveled way, utility construction, utility facilities, utility maintenance, utility operation,	ADT, backfill, bedding, cap, carrier, casing, clear zone, coating, conduit, control of access, cover, cradle, direct burial, drain, encasement, encroachment, flexible pipe, frontage road, full control of access, gallery, gas main, grounded, grout, jacket, manhole, median, new utility installation, normal, oblique, pipe, plowing, pressure, private lines, rigid pipe, roadside, safety rest area, scenic overlook, semi-rigid pipe, service line, stab, sleeve, special provision, specifications, surety, trenched, use and occupancy agreement
<b>General</b>	Permits		A permit from the Department grants license to only undertake certain activities and does not create a property right or grant authority to the permittee to impinge on the rights of others who may have an interest in the ROW	Prior to initiating any utility work upon trunk highway ROW a permit <b>must</b> first be secured. The permit, or a copy of the permit, must be in the possession of the utility contractor at all the times while working on Trunk Highway ROW. If the proposed installation is not in accordance with federal rules or the proposed installation is for longitudinal installation of private lines, the State is required to submit the matter to the U.S Department of Transportation - FHWA	A utility shall obtain a permit from the Department before any use or occupancy of Department highways is allowed. This includes utilities that want to occupy and existing pole line or duct system. The permit does not transfer any land, or give, grant, or convey any land right, right in land, or easement subject to applicable status	New utility installations being installed within highway ROW will require a use and occupancy agree issued by the DOT
		Permit Characteristics	The permittee shall operate in a Department approved manner for traffic control, for use of the ROW and for cleanup and restoration in a timely manner	The applicant shall agree to comply with the following environmental measures: protection measures required for specimen trees and environmentally sensitive areas and preservation of the scenic quality of the highway. For any underground system, complete information regarding the facility and the purpose it serves must also be stated	A utility's request to use and occupy the ROW cannot be considered until adequate information is provided regarding its proposed work. The amount of detail will vary with the complexity of the installation an the highway involved, but must include the appropriate permit form, dimensioned drawings and sketches, and installation information so that the effect of the highway operation, traffic safety, and visual qualities can be evaluated	

Chapter	Components (INDOT)	Components (Other UAP's)	Illinois Feb-92	Minnesota July 27 1990	Wisconsin 1-Jan-00	Tennessee Feb-03
		Responsibility for permits		The Assistant District Engineer Maintenance issues the permits	Representatives of the Department have the authority to enforce the UAP and those specific provisions related to individual utility permits. These representatives include the county highway commissioner and his/her designee.	The utility official signing the use and occupancy agreement must furnish evidence acceptable to the Department that he is empowered to bind the corporation or municipality to the terms of the agreement. The Regional Utilities Engineer will be responsible for reviewing the proposed installation for conformity with the herein stated rules
		Conditions-Permits I	The permit application shall be in a form prescribed by the Department. The application shall require the applicant to provide specific information necessary for the Department to determine whether a permit should be issued. The following information shall be provided: name, legal status, address, proposed use of highway (including location, physical description and type of materials to be used), time schedule for initiation and completion of various steps of the work proposed	The application for a utility permit on trunk highway ROW shall include the pertinent information regarding: highway number, location of the facility, type of construction (aerial or underground), voltage, number and size of conductors, conduit, casing, method of installation for underground facilities, vertical and horizontal clearances, tree clearances, contemplated starting and completion dates	The permit application shall include the limits of all proposed work. If the utility facility extends into more than one county, a separate permit application shall be submitted for each county. Each permit application shall contain adequate drawings showing the proposed location of the utility facility within the ROW with respect to the existing highway or any proposed highway improvement and any existing utility facilities. The details shall include dimensions from the proposed utility installation to the commonly accepted ROW edge of the traveled way. For highway crossings, a cross-section detail showing depth of bury or overhead clearance is required along with the location of any bore pits	To be considered for a permit in a special case, the utility owner must submit to the DOT a study showing that: the proposed utility accommodation will not adversely affect the safety, design, construction, operation, maintenance or stability of the freeway. The facility will not be constructed, serviced or maintained by direct access from the traveled way, shoulders or access ramps of the freeway. The utility accommodation will not interfere with or impair the present operation, use and maintenance, or future expansion of the freeway, and any alternative location would be contrary to the public interest
		Conditions-Permits II		Prior to issuance of the permit, sketches are checked as well as pertinent information regarding the type of facility and compliance with codes, rules and laws pertaining to the facility	The Department may require a utility to provide a description of proposed construction procedures, special traffic control and protection measures, proposed access points, coordination of activities with the highway contractor, or trees to be removed. When an attachment to a structure is proposed, the Department shall request additional information, such as bridge number, weight of lines, hanger spacing, hanger details	The utility shall submit plans or sketches showing the existing and/or proposed location of the utility facilities within the highway ROW with respect to the existing and/or planned highway improvement, the ROW lines, the control of access lines, approved points of access and other existing utilities
		Conditions-Permits III				
		Prior identification of existing utilities	It shall be the responsibility of the permittee to ascertain the presence and location of existing above-ground or underground facilities on the highway ROW to be occupied by their proposed facilities. The Department will make its records available to a permittee for the purpose of identifying possible facilities		Each applicant for a permit to work on a Department's highway shall provide a reliable line-locate notification service by either or both of the following means: One-call utility notification service and/or operational maps which accurately specify the area(s) in which the applicant has lines or a franchise to install lines	
		Indemnification and Insurance	The permittee shall release, defend, indemnify, and hold the State, its employees, and its contractors harmless from all claims for injuries and damages to persons or property (including that of the permittee) relating to the installation, maintenance, relocation, presence, use or removal of the facility. Each District shall determine whether a permittee must provide liability insurance based on the potential harm to highway users or other parties	The utility shall indemnify and hold harmless the department and all of its agents and employees from all claims, demands, actions or causes of action of whatsoever nature or character arising out of or by reason of permit work done or the continuing presence of the utility by virtue of this permit or agreement. The utility shall pay all costs related to service interruptions or damage to their facilities caused by the department's contractor or employees due to highway operations	The applicant shall save and hold the Department, its officers, employees, and agents harmless from all liability, damage, loss, expense, claims, demands, and actions of any nature whatsoever arising out of any acts or omissions of applicant in any way connected with the work to be performed, or the construction or maintenance of facilities by the applicant in the Department ROW	
		Emergency contingency plan	Each applicant, who can anticipate emergency situations that may require an immediate response, shall include an emergency contingency plan with the permit application	The utility will provide a detailed plan of its maintenance schedule including both routine and emergency procedures when submitting its permit application		
		Surety bond I	If required, the permit application will be accompanied by a surety bond that includes the Department as an additional named insured guaranteeing that the proposed work will comply with the terms of the permit, that the applicant will reimburse any injured party for damages relating to the permitted work. The bond is intended primarily to assure the prompt and satisfactory replacement, repair, and completion of work (at no cost to the State or its contractors) on State highway facilities that may be damaged by the utility company's operations			All use and occupancy agreements covering installations of utility facilities within highway ROW shall be accompanied by a bond executed by the owner with good and sufficient surety guaranteeing the performance of the terms and conditions of the agreement. The amount of the bond is based on the extent the highway facilities are disturbed by the installation
		Surety bond II	A contractor who has occasion to frequently request permits for utility work may provide, at its option, a <b>continuing bond</b> . Each bond shall be for an amount which will guarantee full compliance with the permit, including proper installation, proper maintenance, and relocation, modification, and removal upon demand of the Department			

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		Annual Service Connection Permits			A utility may apply for an annual service connection permit from the Department which bypasses the normal permit approval process in order to respond promptly to its customers when they request service connections for their home or businesses from an existing distribution facility within the ROW	Utilities, which operate statewide or in large populated areas requiring many utility permits, can apply for a General Use and Occupancy Agreement.
		Exceptions				Execution of a use and occupancy agreement will not be required for: routine maintenance of utility facilities where pavements and shoulders are not disturbed, placement of additional cable in existing underground ducts, changing of transformers in electric distribution lines, overhead service connections on conventional highways
	Driveway conflicts					
	Private lines			Private lines are allowed only to cross trunk highway ROW. Longitudinal installations are not permitted	The installation of privately owned lines or conduits on the ROW for the purpose of draining wetlands is prohibited	
	Service lines					
	Access Control		Access from the through travel lines or ramps on fully access-controlled highways will not be permitted for installing or servicing of utility facilities	The utility shall provide detailed plans on how the proposed facility will be constructed and maintained without access from traffic roadway or ramp		
	Location			Utility lines should be located to minimize the need for later adjustment to accommodate future highway improvements, and to permit access for servicing lines with a minimum of interference to highway traffic	Utility facilities shall be located in such a manner in order to minimize the need for later adjustment. The Department permits utility facilities on its highway when: such use and occupancy does not adversely affect the primary functions of the highways or materially impair the safety, operational, or visual qualities; there would be no conflict with the provisions of Federal, State, or local laws and regulations; the occupancies would not significantly increase the difficulty or future cost of highway construction or maintenance	When utility facilities must be adjusted and/or relocated to accommodate highway construction, provisions should be made for known or planned expansion of the affected facility
			Utility crossings shall be at or as near as practicable to a 90 degree angle with the highway centerline	All utility crossings of the highway should be normal (perpendicular) to the highway alignment, where practicable	Utility facilities shall cross the highway on a line as nearly perpendicular to the highway alignment as possible	
				The placement of underground utilities may be permitted longitudinally within freeway ROW, provided the utility is placed in accordance with these procedures, and the utility owner has received and approved permit and/or written agreement from the department	Where crossings by underground lines are encased in protective conduit or duct, the encasement shall extend at least two feet beyond the toe of slope or three feet beyond the ditch line	Encasements shall be of a durable material and shall conform to H20 loading where located under the roadway template
				The accommodation will not adversely affect traffic safety, design, construction, operation capacity, maintenance, stability or interfere with the present use of future expansion of the freeway	Appurtenant facilities such as pedestals, manholes, vents, drains, rigid markers, valve and regulator pits, should be located outside of the clear zone and near or at the ROW line. Buildings and cabinets shall not be located on the ROW. Manholes shall not be located in the pavement and should not be located in the shoulders of heavily traveled highways. No work shall be performed in the median of any highway without prior approval from the Department.	
			Longitudinal utilities shall be located as near the ROW line as practicable and not more than eight feet (2.4 m) from and parallel to the ROW line	Longitudinal installations should be located on uniform alignment, with pole lines placed in the outer five feet next to the ROW line. The installation shall be placed on a uniform alignment near the ROW line, or as determined by the department, and with a minimum dept of 36 inches	The longitudinal location of underground utility facilities within ROW shall provide as much clearance from the traveled way as conditions will allow. Such lines shall be on uniform alignment and be located at or near as practical to the ROW line. On both crossing installations and longitudinal installations, poles, guys, or other related facilities shall not be located in a highway median	

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						Longitudinal installations of utility facilities other than certain <b>fiber optic cable facilities</b> shall not be permitted within freeway ROW except in <u>special cases</u> under strictly controlled conditions and only along the outer edge of the ROW
			No new longitudinal utility installations will be permitted under paved longitudinal portions of streets or highways	No installation will be allowed longitudinal within the median of a divided highway		
		Adjacent strip of dedicated land				
		Clear zone		The horizontal and vertical location of the utility lines within the highway ROW shall conform with the clear roadside policy (clear zone) applicable to the type of highway and the specific conditions of the highway section involved	The longitudinal location of above ground utility facilities shall be outside the clear zone. Such lines shall be on uniform alignment and be located at or as near as practical to the ROW line	
		Bridges				Design of utility installations which will occupy highway bridge structures will be reviewed by the DOT
		Fees or Assessments	<b>Compensation</b> , based upon an appraisal by the Department of the fair market value of an easement or leasehold for such use of the highway ROW, will be charged for longitudinal utility accommodations located upon, under or along fully access-controlled highways. All fees may be reviewed once every five years. The Department will charge <b>reimbursement fees</b> for engineering, legal and other expenses incurred in evaluating applications and in establishing such compensation. Charges will also be assessed for the attachment of utility facilities to <b>bridge structures</b>	Prior to starting any work on the freeway ROW the utility shall have: a) paid all required fees to the department - annual fees shall be assigned based on the location of the occupancy (urban, rural) b) placed a performance bond with the department to guarantee prompt restoration of any damages caused during the installation of a facility c) Certify that the utility has and will maintain an appropriate type and amount of insurance coverage d) Received an approved permit from the department	Private utility installations may be assessed a fee by the Department for ROW crossings or occupation. The fee for each installation shall be determined on a case-by-case basis and may be based upon the value of the facility, complexity of the installation, and comparison with fee for other similar utility installations	
		Crossings	Utilities will not be permitted to cross under State Highways in cattle passes, culverts or other drainage facilities			Utility installations through concrete box culverts and pipe culverts will not be considered
		Scenic restrictions	New underground or aerial installations may be permitted only when they do not require extensive removal or alteration of trees or terrain features visible to the highway user or impair the aesthetic quality of the lands being traversed	Ground-mounted and aerial utility facilities shall be of a design compatible with the scenic quality of the specific highway being traversed and shall blend in with the ground countours and the scenery, wherever possible	Utilization of highways by utilities requires that the type and size of its facilities and the manner and extend of its installations shall not materially impair the scenic quality, appearance, or view of highway roadsides and adjacent areas	
		Fiber optic		Only fiber optic cable will be allowed longitudinal freeways		The UAP has a complete chapter for Fiber Optic installation. It is almost a new UAP just for Fiber Optic (See UAP page 26)
		Service connections		Service connections to adjacent properties shall not be allowed form within the access control limits		
		Warning tape		Warning tape will be placed at a minimum depth of 12 inches below the existing ground surface and above the installed facility to help locate the facility in the future		
		Utility sign markers		Utility sign markers shall be placed by the utility within the ROW fence lines. Signs shall identify the owner/operator name, Gopher State One telephone number and type of facility buried by the utility		
		Existing utilities			When a utility facility exists within the ROW of an existing or proposed highway, <b>it may remain</b> provided it does not adversely affect highway safety based on sound engineering judgment and economic considerations. The existing facility shall be relocated if: if conflicts with any construction activities or it is located longitudinally under the pavement or shoulder for a <b>reconditioning or reconstruction project</b>	
		Subsurface Utility Engineering			The use of subsurface utility engineering (SUE) to locate buried facilities is approved by the Department. Any utility installation using SUE shall be noted in the permit form	

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		Vertical location			The depth of bury underground facilities within the ROW shall be a minimum of 24 inches as measured from the finished ground surface to the top of the facility. The depth of bury for underground facilities crossing the highway shall be a minimum of 30 inches. When a minimum bury is not feasible, the facility shall be rerouted or protected with a casing, concrete slab or other measures. Facilities crossing over the highway shall at no time be less than 17 feet above the high point of the traveled way	
		Installation - Exception				If the Department approves installation of Utility facilities by open cutting the highway, the utility will be required to accommodate the traveling Public at all times by keeping one lane of traveled way open and providing necessary flagging and/or construction signing
	Design				The utility shall be responsible for the design of the facility to be installed or adjusted within the ROW. The Department shall be responsible for review of the utility's proposal and for permit approval	The responsibility of designing, installing, maintaining, repairing and operating utility facilities to be located within highway ROW shall be the express obligation of the company, individual or public agency owning the facility. The Department will be responsible for review and approval of the utility's proposal with respect to the location of the utility facilities to be installed and the manner of installation or attachment
				National Electrical Safety Code, Specifications of the American Water Works Association, Standard Code of Pressure Piping of the American National Standards Institute, American Petroleum Institute, Hazardous Materials (CFR Title 49),		A Policy on the Accommodation of Utilities within Freeway ROW - American Association of State Highway and Transportation Officials (1982), National Electric Safety Code, Bureau of Standards, U.S. Department of Commerce, American Water Works Association Standards and Specifications, ANSI Standards for Pressure Piping , American Petroleum Institute for Pipeline Crossings under Railroads and Highways
			Only Department approved materials shall be used in utility installations in the ROW of the State Highway system			All utility installations on, over or under highway ROW and attachment to highway bridge structures shall be made of durable material designed for long life expectancy and relatively free from routine servicing or maintenance
			Capacity for foreseeable future expansion needs shall be provided in initial installations			
					Attachments to highway structures should be avoided.	
		Safety / Traffic control	The permittee is responsible for providing and installing warning signs, protective devices and flaggers as specified in the permit to provide protection of the traveling public and the utility's workers when on the ROW	A written traffic control plan shall be designed based upon the Minnesota Manual on Uniform Traffic Control Devices	All utility work shall be planned and prosecuted with full regard for safety and to keep interference with highway traffic to a minimum. On heavily traveled highways, utility work interfering with traffic may not be allowed during periods of peak traffic flow. Any such work allowed shall be planned so that closure of intersecting streets, road approaches, or other access points is minimized. No utility work shall begin until all required warning signs, devices, and methods adequate to protect public are in place and fully functional. These shall be maintained until all utility work is completed	At all times while construction and maintenance of utility facilities is in progress, the utility shall provide signing and if required, flagging for control of traffic.
		Maintenance				
		Underground crossings		Installation crossing existing highways and made subsequent to highway construction may be placed by augering from inside the pipe. Pre-augering is not permissible. The leading edge of the auger head shall not protrude more than one inch from the end of the casing during boring operations. Carrier pipe six inches in diameter and under may be installed by pushing or jacking it under an existing roadway		
		Cleanup and restoration	The ROW shall be returned to a condition which is at least as good as it was before the permitted work took place, in a timely manner. This includes restoration of entrances and side roads		The utility shall be responsible for restoring the highway and the adjacent ROW to its original (as close as possible) condition <b>within two weeks</b> after completion of the facility installation. All debris, refuse, and waste resulting from the utility's activities shall be removed from the site and the motorist's view unless otherwise provided by the permit.	The utility company shall replace or repair any portion of the ROW, embankment, pavement, shoulders, highway bridges and drainage structures, access roads or any other part of said highway which may be disturbed or damaged. All debris, refuse and waste of any kinds, which have accumulated upon the highway ROW as a result of the installation of utility facilities, shall be removed immediately upon completion of construction operations

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		As-Built Plans	If the permitted facility is not place as shown in the application, the permittee shall submit a set of <b>as-built plans</b> to the Department's District Office within 90 days after the completion of the permitted work. If the Department disapproves the as-built plans, then the permittee shall either remove the facility from the ROW or modify the facility so that it conforms to the permit	On completion of the installation, two copies of the Certificate of Completion and "as built" plans must be sent to the Assistant District Engineer, Maintenance		
		Trenching		Pipe lines installed prior to or in conjunction with new grading projects may be trenched in place. The minimum depth of cover in the ditch shall be 3 1/2 feet, unless other protective measures are applied	When necessary, trenches for underground utility facilities shall be backfilled with material excavated from the trench. The Department may require that backfill and repaving be performed by county forces at the expense of the utility	
		Gravity systems		Gravity systems shall be encased when installed by jacking and/or boring, unless the carrier pipes is of such size and material that it would normally be installed without casing		
		Trees	Tree trimming for line clearance shall not be considered a normal maintenance operation and each tree trimming project shall require the application for and the issuance of a separate working permit / The Department will require compensation for trees extensively damaged and for trees removed without authorization	Where underground utilities are to be installed near specimen trees, as identified by the State, the tree root systems shall be protected by boring (tunneling) under the roots (See Table Tree diameter vs Distance from face of tree trunk)	Utilities shall be prohibited from chemical treatment or cutting of trees on Department highways without a permit from the Department	The trimming, cutting, spraying or removal of trees and shrubs or other vegetation located within the highway ROW shall either be permitted or denied in accordance with the current regulations established by the Maintenance Division of the DOT
		Untrenched construction		Pipelines place using trenchless technology, such as jacking, boring, or horizontal directional drilling methods, may be placed under highways without a casing pipe if they meet specified requirements	Untrenched construction shall be required for all underground utility crossings of all highways that have a paved surface and are open to traffic unless specifically authorized in the permit. Untrenched installation of utility facilities may be accomplished by tunneling, driving, coring, and/or dry boring. Wet boring under the highway shall be prohibited unless specifically authorized in the permit	Boring, jacking or driving of encasement or carrier pipes under existing highways shall be accomplished without jetting, sluicing or wetboring. The oversize of the boring excavation shall not be greater than one inch in excess of the outside diameter of the encasement or carrier pipe being installed
		Non-metallic lines			Any non-metallic pipe, cable, or other kind of utility line which lacks a continuous and integral metallic component capable of detection by locating instruments shall be accompanied in its location by a continuous detectable metallic tracer wire or metallic tape	
<b>Structures</b>	Utility structures			No high pressure natural gas distribution lines are permitted on highway structures. A shut off valve is required on all pressure lines within reasonable distance from each end of the structure. Gas lines must be vented in an approved manner	When a utility facility is attached to a structure, the installation shall be located beneath the structure floor, inside the outer girders or beams or within a cell, or at and elevation above low superstructure steel or masonry which would not inhibit bridge inspections or repairs. The openings created in the bridge abutments to allow passage of the permitted facility shall be of the minimum size necessary	The safe operation of the highway facility, efficiency of maintenance, and appearance of the highway facility shall be taken into consideration during design. Tunnel liners shall be of a durable material and shall conform to HS2044 loading where located under the roadway template and shall be designed and installed in accordance with AASHTO specification for highway bridges
	Highway structures		It shall be the general policy of the Department to grant approval for accommodation of utilities on bridges only when engineering and economic study substantiates that all other means of accommodating the utility are not practical. Utility facilities attached to highway structures constitute varying degrees of hazards to the highway user and to the structure itself	Utility installations on highway structures are allowed by utility permit or may be provided for by agreement when installed in conjunction with highway construction. Such installations must be approved by the MDOT, office of bridges and structures before construction of the utility's facility may begin	Pipelines that will be attached to a highway structure shall not exceed a maximum internal pressure of 150 PSIG. Pipelines carrying pressures in excess of 150 PSIG shall be considered only if no other alternative location off the structure is feasible	Design of utility installations which will occupy highway bridge structures will be reviewed by the DOT subject to: there is no other feasible, reasonable or economical location for the utility facility. Gas mains and gas distribution mains, when designed for Type D construction and class 4 location as set out in ANSI Standard Code for Pressure Piping B31.8, will be permitted to occupy bridge structures
	<i>Structural Analysis</i>		The petitioner shall submit plans and specifications showing the size, weight per foot, and proposed method of attachment of the utility elements and stating the type of commodity to be transmitted	The utility is responsible for the design of its facility. All utility installations on highway structures shall be constructed of durable materials designed with a long life expectancy, and must be installed in a manner that will minimize routine servicing and maintenance over the design life of the facility. The system should be planned so as to avoid interference with highway traffic should expansion be required		
	<i>Attachment Details</i>		No utility attachment to a bridge or traffic structure will be considered that proposes: burying conduits or cables in bridge slabs or sidewalks, welding on structural steel elements of the structure, drilling into prestressed or post-tensioned concrete supporting beams, attaching in a manner that will reduce critical clearances	The strength of beams or girders cannot be reduced by drilling or welding		
	<i>Asbestos Materials</i>					
		Application				

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Pipelines	General				Special treatment of pipelines beneath highways should not be required provided the pipe would be installed by jacking and/or dry boring the carrier pipe to an essentially snug fit	Definitions by ANSI Standard Code 805.62 and B31.8-1968 (Pipeline or transmission line and pressure piping, gas transmission and distribution piping systems)
	Methods of protection					
	Manholes, vaults and pits					
	Depth					
	Methods of installation					For all crossings, the angle of crossing shall be based on economic considerations of practical alternates.
	Locations					Longitudinal installations of pipelines or transmission lines within highway ROW will be considered only in extreme hardship cases.
	Clearances					Vertical and horizontal clearances between a pipeline and a structure or other highway or utility facility should be sufficient to permit maintenance of the pipeline
	Materials		Casing pipe shall be designed to withstand the load of the highway and any other superimposed loads / Underground utility crossings without encasement will generally preclude future maintenance or repair in the area between ditch lines or toes of slopes			
		Casings		All pressure pipes six inches in diameter and larger carrying liquids and gases shall be encased when crossing under the roadbed of trunk highways. Casing pipe shall be installed using equipment that encases the hole as the earth is removed. Boring without the concurrent installation of a casing pipe is not permissible. All joints in steel casing pipe shall be welded. Casing pipe shall extend through the entire fill and be installed in a manner that will not disrupt traffic nor damage the roadway grade and surface	The department shall require special treatment such as casing, cathodic protection, thickened wall carrier pipe, coating and wrapping, concrete sleeves, or caps of particular pipe crossings if, such installation shall be more protective of the highway of the safety and convenience of the traveling public	Pipelines may be installed under State highways without using and encasement under the following conditions: a) trenched construction is utilized in the adjustment of existing pipelines to accommodate reconstruction of highways b) new installations under existing state highways where soil conditions permit the installation of the carrier pipe at a depth with minimum cover or greater without damage to its protective coating. Encasement shall be required under the following conditions: a) crossings where it is not possible to obtain minimum cover due to other utilities, soil conditions, water table b) pipelines near footing of bridge
	High pressure gas and liquid petroleum lines		Gas pipelines shall be constructed, maintained, and operated in a Department approved manner in conformance with "Transportation of Natural and Other Gas by Pipeline: Minimum Federal Safety Standards. Petroleum products pipelines shall conform to the applicable sections of ANSI Standard Code for pressure piping ANSI -B 31.4 New longitudinal gas and petroleum pipelines will not be permitted within the access control lines of fully access-controlled highways. Gas pipelines may be permitted longitudinal to the centerline of conventional state Highways		Minimum standards: Wisconsin Administrative Code, American Water Works Association , Pressure pipelines (Title 49, Code of Federal Regulations of the Office of Pipeline Safety), American Petroleum Institute for pipeline crossings under railroads and highways, Standard Specifications for Water and Sewer Construction	Longitudinal installations on conventional highways shall be located as near the ROW line as possible and alignment shall be as near uniform as practical. Vertical and horizontal clearance between a gas main or gas distribution main and highway structures or other highways or utility facilities shall be sufficient to permit maintenance of the gas main or gas distribution main and other facilities
Depth of cover		Gas pipeline crossings shall have a minimum cover of 0.75m at all locations on ROW			The minimum cover shall be 30 inches below the low point of the highway cross section for encased crossings and 36 inches for uncased coverings	

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	<i>Crossings</i>		Crossing installations by open trench will be permitted only prior to road way construction with vented encasement provided between ultimate ditch lines or toes of slopes of the highway as a minimum. Minimum cover: 0.75m at all locations on ROW.			For all crossings, the angle of crossing shall be based on economic considerations of practical alternates.
	<i>Vents</i>		Crossings under completed highway projects shall be installed by jacking, or boring, with vented encasement. Encasement may be eliminated when extra heavy pipe is used and cathodic protection of the pipe is provided. Maximum maintenance-free service life			
	<i>Markers</i>		No above-ground vent pipes shall be located in the area established as clear zone			Encased crossings shall be vented in order that gases may be exhausted or evacuated from encasement pipe. The vent standpipes shall be located at or as near to the ROW line
			The location of petroleum products pipeline crossings shall be marked at the ROW line with markers that identify the utility and provide emergency telephone numbers			Every pipeline or transmission line shall be identified by a permanent marker at the ROW lines or as near thereto as possible
	Low-pressure gas					
	<i>Depth of cover</i>		Gas pipeline crossings shall have a minimum cover of 0.75m at all locations on ROW			
	<i>Crossings</i>		(Similar to high pressure gas)			
	<i>Vents</i>				Vent standpipes are not required for casings but when used, the vent shall be located and constructed to not interfere with maintenance of the highway nor be concealed by vegetation. These pipes should stand near a fence or the ROW line	
	<i>Markers</i>		The location of the crossing pipe shall be marked at the ROW line with markers that identify the utility and provide emergency telephone numbers			
	<i>Plastic Lines</i>					
	<i>Location Exceptions</i>					
	Water lines		Waterlines shall be installed to meet or exceed the recommendations of the current "Standard Specifications for Water and Sewer Main Construction in Illinois". Longitudinal lines shall be located as near the ROW line s practicable and no more than 2.4m from and parallel to the ROW line. New longitudinal water mains will not be permitted between the access-control lines of fully access-controlled highways			See Underground power
	<i>Depth of cover</i>		Water main cover shall be sufficient to provide freeze protection and shall be maintained at a minimum of 0.9m			
	<i>Crossings</i>		Encasement may be omitted if pipe is installed prior to highway construction and continuous or restrained joint carrier pipe is used. Bell and spigot type shall be encased regardless of installation method. Crossings of completed highway projects shall be installed by jacking or boring with encasement provided between jacking or bore pits. Crossing shall provide water service to a general or expanding area			Water mains and water service lines in excess of two inches in diameter and sanitary sewer crossings normal to and under the traveled way of existing highways shall be encased when installed by boring or pushing under the traveled way

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	<i>Plastic Lines</i>					
	<i>Location Exceptions</i>					
	<i>Appurtenances</i>		Ground-mounted appurtenances to waterlines shall be located within 0.3m of the ROW line or as near as practicable			
	<i>Drains</i>					
	<i>Markers</i>					
	Sanitary Sewer Lines		Longitudinal lines shall be located as near the ROW line as practicable and no more than 2.4m from and parallel to the ROW line. New longitudinal storm sewers will not be permitted between the access-control lines of fully access-controlled highways			See Underground power
	<i>Depth of cover</i>		Sewer and drain lines shall have minimum cover of 0.75m with cover sufficient for freeze protection			
	<i>Crossings</i>		Sanitary sewers may be permitted to cross highways. Casing may be omitted for crossings installed by open trench method prior to highway construction if the sewer system is unpressurized. Crossings of completed highway projects shall be installed by jacking or boring with encasement provided between jacking or bore pits			
	<i>Materials</i>					
	<i>Non-Metallic Lines</i>		All non-metallic underground utilities will have a Department approved metallic locator installed above the facility			
	<i>Location Exceptions</i>					
<b>Overhead Power and Communications lines</b>	General		Electric power or communications installations on state highway ROW shall be constructed, operated, and maintained in conformity with the provisions of the National Electrical Safety Code	Aerial installations may be permitted only when other locations are not available, are unusually difficult or costly, or are less desirable from the standpoint of aesthetic quality	The minimum standards for the design, construction, operation, and maintenance of communication-type utility facilities shall be those embodied in the Wisconsin Administrative Code. The facility shall at least conform with the currently applicable National Electrical Safety Code	
	<i>Type of Construction</i>				Any longitudinal installations of overhead lines within the ROW should utilize single pole construction	Longitudinal installations of overhead lines within highway ROW are limited to single pole type of construction. Alignment shall be as near uniform as practical to avoid anchors, stub poles and other ground mounted appurtenances
	<i>Vertical Clearances</i>		Overhead crossings of power and communication lines over fully access-controlled highways shall provide a minimum vertical clearance over the roadway of 6.1m. Where practicable, the crossing shall span the entire ROW with no poles, guys or appurtenances within the access-control lines. Overhead crossings at major interchanges will be discouraged			The minimum vertical clearance for overhead communications and power lines above the traffic lanes of the highway and the lateral and vertical clearance from bridges shall conform to currently applicable National Electrical Safety Code

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	<i>Location</i>		Longitudinal pole lines will not be permitted within the access control lines of fully access-controlled highways. Overhead crossings shall be transmission or distribution lines serving a general area or to serve a developing area. No individual service crossings will be permitted to cross a fully access-controlled highway.			On and along conventional highways in rural areas, poles and related ground mounted appurtenances shall be located at or as near practical to the ROW line. Longitudinal installations will not be permitted in the highway median. On or along conventional highways in urban areas, poles and related ground mounted appurtenances shall be located at or as near as practical to the ROW line
	<i>Clear Roadside</i>		No utility poles will be permitted in the ditch line of any State highway			The poles shall be located outside the clear zone for the highway section involved without full access control
		Ground mounted appurtenances	Ground mounted appurtenances shall be provided with a vegetation-free area extending 0.3m beyond the appurtenance in all directions			
	Telecommunication towers <i>Applicability</i>					
	<i>Location</i>					
	<i>Multiple providers</i>					
<b>Underground power lines</b>	<i>Depth of cover</i>		Longitudinal lines shall be located as near the ROW line as practicable and no more than 2.4m from and parallel to the ROW line. Installation shall have a minimum cover of 0.75m. Underground power cables must be grounded in accordance with the National Electrical Safety Code		The minimum standards for the design, construction, operation, and maintenance of communication-type utility facilities shall be those embodied in the Wisconsin Administrative Code. The facility shall at least conform with the currently applicable National Electrical Safety Code	On or along conventional highways in urban areas, underground utility facilities shall be located at or as near as practical to the ROW line. On conventional highways in rural areas longitudinal installations shall be at or as near as practical to the ROW line. The alignment of facilities shall be as uniform as possible under prevailing circumstances in order that points of access for installation and maintenance may be kept to a minimum
	<i>Crossings</i>					Crossings shall be located as near normal to the highway alignment as practical. Crossing shall have a minimum of 36 inches of cover under the low point of the highway for uncased installations and 30 inches for encased installations
	<i>Markers</i>					
	<i>Location and Installation</i>			New underground or aerial installations may be permitted only if extensive removal or alteration of trees or terrain features visible to the highway user is not required, or the aesthetic quality of lands being traversed is not impaired		Longitudinal underground installations under sidewalks or grass plots of curb located within 8 ft of the ROW shall have a minimum cover of 24 inches. All longitudinal underground installations which cross under drainage ditches will be located a minimum of 36 inches below the flow line of the ditch (See figure)
	<i>Appurtenances</i>					Pedestals, fire hydrants, markers or other above ground utility appurtenances installed as a part of underground utility facilities shall be located at or as near the highway ROW as practical
	<i>Manholes, vaults and pits</i>					Manholes will not be permitted in the median. Provisions shall be made in the overall installation of underground facilities to provide shut-off valves or sectionalizing devices in order that segments of the facility may be taken out of service promptly in case of damage or failure

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Underground Communications Lines	Depth of cover					
	Crossings		Underground crossings will be permitted when the crossing provides a transmission or distribution service to a general area or an expanding area. Encasement shall be provided between jacking or bore pits, if the crossing is installed by boring or jacking			
	Markers					
	Non-Metallic Lines					
	Location and Installation		New underground power an communications lines longitudinal to the centerline will not be permitted within the access-control lines of fully access-controlled highways under the following conditions: no pavement cuts, when the utility would endanger or impair other utility facilities already in place, when the utility would interfere with or impair the present use or future expansion of the highway			
	Appurtenances		Above ground mounted appurtenances to electric power or communication lines within the access control lines of fully access controlled highways will normally not be permitted except in cases of extreme need		Appurtenances which would constitute a hazard to traffic shall not be permitted within the clear zone and should be located outside the ROW	
	Manholes, vaults and pits					
Irrigation and drainage pipes, ditches and canals					Irrigation and drainage facilities installed across the ROW generally shall be designed and constructed in accordance with the WDOT's specifications of the Facilities Development Manual	
Miscellaneous	General					
	Preservation, restoration					
	and cleanup Safety and Convenience					
	Records					
	Construction Identification					
	of Utilities					
	Trenching and backfill		The length of open trench shall be kept to the practicable minimum consistent with requirements for pipeline testing / Where practicable, the excavated material shall be deposited between the roadway and the trench as added protection / Excavated material will not be allowed to remain on the paved portion of the roadway			

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			All trenches and excavations under pavements shall be backfilled with a Department approved granular material			
	Underground Plant					
	Protection Pavement cuts		Pavement cuts for utility installation or repair will not be permitted on any State highway open for traffic			The DOT will not permit the cutting of pavement of traveled lanes or excavations of adjacent shoulders for replacement , maintenance or inspection of uncased pipeline crossings
Other		Other uses of the trunkline				
		Emergency operations	Emergencies that require immediate attention or repair of a utility installation may preclude following normal procedures for securing a working permit. If an emergency creates a hazard on the traveled portion of the roadway, immediate steps shall be taken by the utility company to provide all necessary protection for traffic on the highway, including the use of signs, lights, barricades or flaggers		Emergency repairs may be performed within the ROW when physical conditions or time considerations prevent application of the usual permit. However, the utility shall advise the Department of the emergency, its plans or actions for alleviating the dangerous situations, and arrangements made for control and protection of traffic or pedestrians affected by its proposed operations	
		Closing				
		Obligation to remove, relocate or modify	The permittee shall remove, relocate, or otherwise modify its facility when required to do so. The Department may also give written notice that the permittee shall remove, relocate, or otherwise modify its facility	The utility agrees to waive all <b>future claims</b> , if any, to relocation costs caused by maintenance or reconstruction of the transportation system requiring relocation of their facilities		
		Apportionment of Costs	Unless the permittee shows that another allocation of the cost of undertaking the requested action is appropriate, the permittee shall bear the Department's costs of damages and its costs of installing, maintaining, modifying, relocating, or removing the facility which is subject of the permit	All additional identifiable costs incurred by the department in accommodating existing utility facilities during maintenance operations and reconstruction projects will be charged to the utility		
		Construction and maintenance activities		Construction and maintenance activities shall be accomplished without access from through-traffic roadways or ramps. Access can be obtained from a frontage road, rest area parking facility, near-by public road or trail along the ROW	A complete copy of the permit shall be in the possession of the utility's work force at all times when utility work is being performed within the ROW. Any use of a highway median is prohibited unless specifically authorized by a permit. No guard pole shall be set within the ROW unless specifically authorized by a permit. Blasting on the ROW is prohibited. No tree or shrub shall be sprayed, cut, trimmed, or damaged to facilitate the installation of a utility facility unless specifically authorized by a permit. Upon completion of permitted work and restorations, written notice shall be filed within 10 calendar days with the Department.	Areas disturbed by utility installations, relocations or removals shall be kept to a minimum. Utilities will not be permitted to install facilities by cutting pavement or adjacent shoulders of State highways
		Abandoned facility			If a utility discontinues use of an above ground facility, the facility shall be entirely removed from the ROW within one year after its use is discontinued. A record of underground utility facilities abandoned in the ROW shall be maintained in a utility's permanent files until the facility is completely removed from the ground. Utility facilities abandoned on a structure shall be removed within 60 days of the abandonment	
		Failure to comply			At the Department's option, the following measures may be taken if a utility fails to comply with the UAP or its permit provisions: verbal request for corrective action, written reprimand, suspension of work activities, removal of installed facilities, permit revocation, public service commission notification, withholding approval of future permits	Where it is determined by the Department that utility facilities have not been installed according to approved plans the utility will be required to adjust, relocate or remove such facilities at its own expense
		Inspection			Inspection of work in progress or/and Inspection of completed work. When a utility operation or installation is not in compliance with the Policy or the provisions of its permit and is adversely affecting public safety, the inspector shall take immediate action	The DOT will inspect all utility installations within highway ROW. The utility agrees to reimburse the DOT for inspector's salary, equipment use and miscellaneous expense applicable to the installation of the utility facility

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		Environmental conditions			This policy specifies responsibilities and the procedures that a utility shall follow when environmental conditions are encountered in the ROW. These conditions include, but are not limited to: archeological sites, historic structures, contaminated soils, underground storage tanks, and leaking underground storage tanks	
		Work site safety			The utility is responsible to assure that the work site is secure against any hazard to the public at all times until all of the work is completed. Vehicles, equipment, and materials which are in active use at the work site shall be regulated by the utility as to assure consistently safe conditions	No excavated material or equipment shall be placed on the pavement or shoulders of the highway. In no instance will the utility be permitted to leave equipment (trucks, cranes, backhoes, etc.) on the pavement or shoulder overnight
		Erosion control and storm water management			A utility shall assure that proper erosion control and storm water management measures are implemented at all times during work operations. The utility shall also be responsible for providing erosion control and storm water management measures to protect all restored areas upon completion of the project until the replacement vegetation achieves sustained growth	
		Fire Hydrant Location Markers				
	Others from Utility installation details	Galleries				
		Access for servicing utilities				
		Scenic enhancement		New utility installations, including those needed for highway purposes (such as for highway lighting or to serve a weigh station, rest area, or recreation area) are not permitted on highway ROW or other lands acquired or improved that are located within, or adjacent to, areas of scenic enhancement and natural beauty. Such areas include public parks and recreational lands, wildlife and waterfowl refuges, historic sites		
		Light poles	Light poles shall be of single pole construction located as near as practicable to the ROW line and, where possible, in protected areas. No light poles will be permitted in the ditch line of any State highway.	Any above ground lighting facility, lighting fixture supports or other above ground structures, must be located outside of the clear roadside policy area (clear zone)		The UAP has definitions, specifications and procedures for roadway lighting (Refer to UAP Page 20)
		Above ground facilities (Other Utilities)	Only light poles, power lines and communication lines facilities and appurtenances to underground facilities such as regulator vault gauge boxes, highway crossing casing vents, service and system pressure regulator installations and pipeline markers will be allowed above-ground on State highways			
		Track and Rail facilities	An applicant may be granted a permit for the placement of track and rails on a State highway ROW (See page 28 - UAP)			
		Boring or jacking	Boring or jacking under State highways shall be accomplished from pits located a minimum of 9.1m from the edge of pavements on fully access-controlled highways and at a distance of 3m plus the depth of the pit without shoring on conventional highways / Wet boring or jetting will not be permitted			
		Boring - Spec	Boring over 150mm in diameter shall be accomplished with an auger and following pipe and the diameter of the auger shall not exceed the outside diameter of the following pipe by more than one inch. Borings 150mm and under may be accomplished by either jacking, guided whip auger or auger with following pipe method / While pits are open, they shall be clearly marked and protected by barricades			
		Material storage on ROW	All pipe, conduit, wire, poles, cross arms or other materials distributed along the highway prior to installation shall be placed as remotely as practicable from the edge of pavement in a manner to minimize its being a hazard			

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		Operational Restrictions	Utility construction or maintenance operations on State highway ROW may be required to be discontinued during periods of inclement weather or when soil conditions are such that the utility work would result in extensive damage to the highway ROW			
		Vegetation Control	Spraying of live foliage with any type of brush-killing chemicals in lieu of cutting will not be permitted on State highway ROW			
		Application Denial, Revocation and Sanctions	A permit shall be granted unless the Department makes any of the following findings: that an applicant has a history of not responding to Department requests, that there is no public need for the placement of the requested facility, the placement will unduly threaten the safety and convenience of highway users, the proposed installation is not in compliance with the UAP			
		Sanctions	Failure of the permittee to: comply fully with the terms of the permit, remove, relocate or modify its facility when required to do so by the department. The Department may impose sanctions and conditions on a permittee which may include: the permit may be revoked in part, a surety bond may be required, and existing and future facilities may be required to be buried and encasement may also be required			
		Incompatibility	If the continued use and occupancy of the ROW is incompatible with highway needs, the Department may require the permittee to modify or remove its facility and may amend or revoke the permit			
		Change of ownership or owner's identity or legal status	The permittee shall notify the department. If the permittee is sold, the new of the permittee shall have all the obligations and privileges enjoyed by the former owner. If the legal status of the permittee changes, the permittee is still bound by the permit			
		Multi-Duct System		The department reserves the right to require installations to be placed in a multi-duct system consisting of two or more inner ducts. The installation details are subject to the approval of the department. The department may designate the first utility company requesting occupancy as the "lead utility". This company shall be responsible for the design and construction of the multi-duct system		
		Private Utility Facilities			Private utility-type facilities may be allowed to cross Department highways and are not subject to approval by the FHWA. All private utility facilities shall follow the requirements of the UAP and shall be designed, constructed, operated, and maintained as described in the policy	