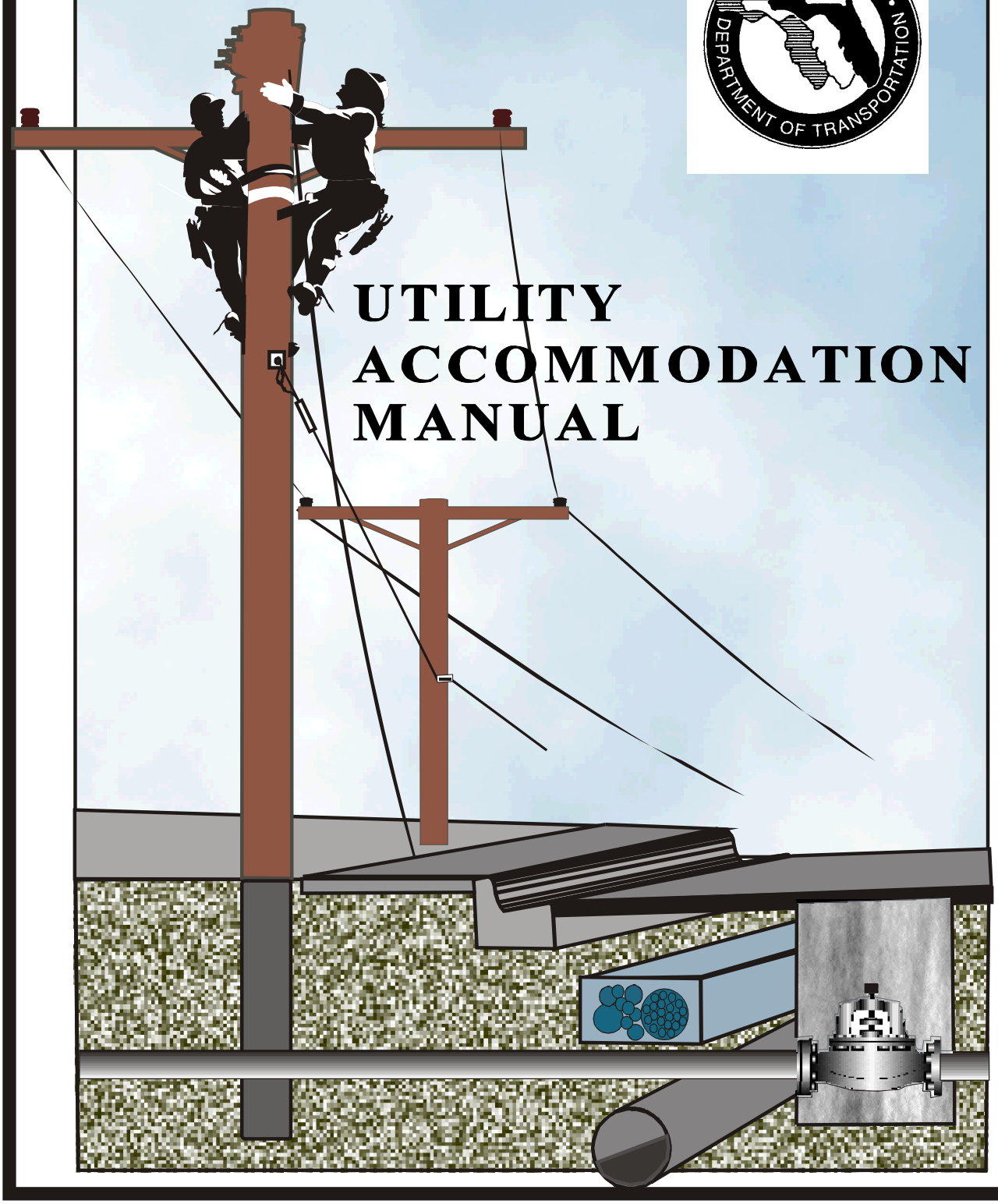
Document No. 710-020-001-d

FLORIDA DEPARTMENT OF TRANSPORTATION



UTILITY ACCOMMODATION MANUAL

January 1999

TABLE OF CONTENTS

PREFACE i

CHAPTER 1 - INTRODUCTION 1-1
1.1 Purpose 1-1
1.2 Authority 1-1
1.3 Scope 1-1
1.4 General 1-1
1.5 Distribution 1-2
1.6 Revisions and Additions 1-3
1.7 Forms 1-3
1.8 Training 1-3

CHAPTER 2 - DEFINITIONS and ACRONYMS 2-1

CHAPTER 3 - UTILITY PERMIT 3-1
3.1 Utility Permit 3-1
3.2 Permit Application 3-1
3.3 Processing 3-3
3.4 Signing & Sealing Utility Plans 3-6

CHAPTER 4 - REQUIREMENTS FOR PERMITS 4-1
4.1 Installations Requiring Permits 4-1
4.2 Installations Not Requiring Permits 4-2
4.3 Additional Permit Requirements 4-3
4.4 Permit Non-compliance 4-4

CHAPTER 5 - ACCOMMODATIONS STANDARDS 5-1
5.1 Basic Requirements 5-1
5.2 Crossings 5-8
5.3 Limited Access Crossings 5-9
5.4 Attachments to Structures 5-11
5.5 Other Systems 5-17
5.6 Pavement Cutting / Trenching of a Transportation Facility 5-17

CHAPTER 6 - SPECIAL REQUIREMENTS FOR INSTALLATION, RESTORATION OF RIGHTS-OF-WAY AND MAINTENANCE OF A UTILITY 6-1
6.1 General 6-1

CHAPTER 7 - MAINTENANCE OF VEGETATION 7-1
7.1 General 7-1
7.2 Tree Trimming 7-1

7.3 Removal of Vegetation 7-1
7.4 Chemical Control of Vegetation 7-2

CHAPTER 8 - MAINTENANCE OF TRAFFIC (MOT) 8-1
8.1 Background 8-1
8.2 Traffic Control Plan (TCP) 8-1
8.3 Training and Job Control 8-2
8.4 Rail Flagging 8-3
8.5 Non-Compliance 8-3

CHAPTER 9 - LOCATION CRITERIA FOR UTILITIES ON NON-LIMITED ACCESS FACILITIES 9-1
9.1 Resurfacing, Restoration, & Rehabilitation (RRR) Construction Projects 9-1
9.2 Control Zones Or Conditions (RRR) 9-4
9.3 Transportation Facilities Other Than Limited Access or RRR 9-5
9.4 FDOT Railroad Corridors 9-6
9.5 Airport/Airport Properties 9-6
9.6 Restrictive & Non-Restrictive R/W Area 9-6

CHAPTER 10 - GENERAL REQUIREMENTS 10-1

CHAPTER 11 - UTILITY SURVEY 11-1
11.1 General 11-1
11.2 Responsibility 11-1
11.3 Locates 11-2
11.4 Subsurface Utility Engineering (SUE) 11-3

CHAPTER 12 - ACCOMMODATION OF UTILITIES ON LIMITED ACCESS RIGHTS-OF-WAY 12-1
12.1 Limited Access Policy 12-1
12.2 Permitted Utility Activities On Limited Access Facilities Posted Speed > 50 MPH 12-1

CHAPTER 13 - EXCEPTIONS 13-1
13.1 General 13-1
13.2 Types Of Exceptions 13-2
13.3 Concurrence & Approval of Design Exceptions 13-2
13.4 Coordination of Design Exceptions 13-3
13.5 Justification And Documentation of Design Exceptions 13-3
13.6 Concurrence Review of Design Exceptions 13-4

EXHIBITS

Exhibit A - "Utility Exception Form".
Exhibit B - "General Exception Considerations".
Exhibit C - "Exception Considerations for the Designer".
Exhibit D - "Exception Considerations for the Utility".
Exhibit E - "Generalized Location Decision Flow Chart".
Exhibit F - "Utility Exception Flow Chart".
Exhibit G - "Exception Scenarios on RRR Projects".
Exhibit H - "Control Zones".
Exhibit I - "Project Type Location and Relocation Decision Flow Charts".
Exhibit J - "Utility Permit Form".
Exhibit K - "Map - FDOT District Boundaries".

REFERENCES

PREFACE

The intent of this manual is to provide direction, policy, criteria, and regulations for the accommodation of utilities within state transportation facility rights-of-way. The criteria in this Manual shall be applied through the exercise of sound engineering judgement.

Pursuant to Section 334.044(1), Florida Statutes, the Department has the responsibility for coordinating the planning of a safe, viable, and balanced state transportation system serving all regions of the state, and to assure the compatibility of all components, including multi-modal facilities. This Manual sets forth the criteria and procedures of the Florida Department of Transportation for the accommodation of utilities within state transportation facility rights of way pursuant to Sections 337.401 through 337.404, Florida Statutes. Sections 337.401 through 337.404, Florida Statutes, are a part of the Florida Transportation Code, as set forth in Section 334.01, Florida Statutes, and are applied in accordance with the purpose of the Florida Transportation Code, as set forth in Section 334.035, Florida Statutes.

Section 337.401(1), Florida Statutes, provides the Department with the specific authority to prescribe and enforce reasonable rules or regulations governing the placing and maintaining utilities along, across, or on any state transportation facility. Section 337.401(2), Florida Statutes, provides that the Department may grant the use of the rights-of-way for a utility in accordance with Department rules or regulations and that no utility shall be installed, located, or relocated unless authorized by a written permit issued by the Department. Section 337.401(2), Florida Statutes, further provides that the permit shall require the permit holder to be responsible for any damage resulting from the issuance of such permit. Section 337.403(1), Florida Statutes, provides that any utility found by the Department to be unreasonably interfering in any way with the convenient, safe, or continuous use, or the maintenance, improvement, extension, or expansion of a state road or publicly owned rail corridor shall, upon proper notice, be removed or relocated by such utility.

Utilities Liaison - Recognizing that all utility owners serving the public have a common obligation to provide their services in a cost effective manner, the FDOT will coordinate its advance planning of highway projects with the affected utilities to facilitate the relocation of the utility in order to eliminate costly construction delays. As part of the project planning and development process, the FDOT will consider the cost of utility work necessary for the proposed project. The FDOT will keep utility agencies informed of future transportation projects and request the utility agencies to advise the FDOT of the location of existing and proposed structures within proposed project corridors.

The following web site is available for accessing general information on FDOT business, documents, and the Five Year Work Program. “http://www.dot.state.fl.us/” Utility information is found by routing through “Doing Business with FDOT” then “Roadway Design” and then “Utilities”.

Chapter 1

INTRODUCTION

1.1 Purpose

This manual is established to regulate the location, manner, installation and adjustment of utility facilities along, across or on any Transportation Facility under the jurisdiction of the Florida Department of Transportation (FDOT).

1.2 Authority

Section 337.401 through 337.404, Florida Statutes.
Rule 14-46.001, Florida Administrative Code.

1.3 Scope

This manual is used by FDOT Utilities, Construction, Maintenance, and Design Offices for compliance review and issuing permits for utility installations as authorized under Section 337.401 through 337.403, Florida Statutes, and Rule 14-46.001, Florida Administrative Code. Utility companies use this manual as criteria for application for utility permits.

Since all utility owned facilities on FDOT rights-of-way must be authorized by permit, all utility design work, to the extent allowed by Florida law, must comply with the requirements found in this manual. Therefore, District staff and consultants performing utility work on FDOT rights-of-way must also adhere to this manual. The requirement of a permit is a statutory mechanism for documenting and controlling appropriate use of the rights-of-way.

1.4 General

The FDOT Utility Accommodation Manual draws upon many resources as guidelines to establish standards for utility work or placement and reimbursement cost within the rights of way. For example, see the US Department of Transportation Federal Highway Administration Federal-Aid Policy Guide. When and if an FDOT standard is found to be more stringent, the FDOT standard shall be the rule.

Disputes pertaining to utility accommodation which cannot be resolved at the local or district level by mutual agreement shall be referred to the State Utility Engineer or designee by the District Maintenance Engineer for resolution. Disputes over Exceptions to Non-Limited Access Policy or Criteria/Standards shall be referred to

the State Roadway Design Engineer or his designee for resolution.

While this manual governs matters concerning future location, manner and methods for the installation, adjustment, and maintenance of utilities on FDOT rights-of-way, it does not alter current regulations pertaining to authority for their installation, nor does it determine financial responsibilities for placement or adjustment thereof.

The presence of existing aboveground and underground facilities in FDOT rights-of-way will be presumed to be properly permitted in accordance with the existing guidelines in effect at the time of their installations, whether or not documentation to that effect exists. The Permittee will relocate or adjust existing utility facilities to comply with the current utility accommodation manual when transportation facility improvement projects necessitate relocation or analysis of crash evidence (physical or recorded) indicates a need to relocate the utility facility, unless the relocation (a) conflicts with other standards, codes or regulations that provide for the public health and safety or, (b) will not be economically feasible for the benefit desired. The FDOT will make crash data available upon request.

Where the Permittee has a compensable interest in the land occupied by the facilities and such land is to be jointly owned or used for a transportation facility and utility purposes, the FDOT and Permittee shall agree in writing as to the obligations and responsibilities of each party. In any event, the interest to be acquired by or vested in the FDOT in any portion of the rights-of-way of a transportation facility project to be occupied, used, or vacated, by utilities, shall be of a nature and extent adequate for the construction, safe operation and maintenance of the transportation facility.

This manual is also used for issuing utility permits for work which is in the interest of public safety, protection, utilization and future development of utilities and transportation facilities. Due consideration will be given to public service afforded by adequate and economical utility installations, as authorized under Section 337.401, Florida Statutes and Rule 14.46.001, Florida Administrative Code.

1.5 Distribution

This manual is issued by the State Utilities Engineer and is furnished to Department of Transportation personnel at no charge, upon request. For persons external to the FDOT, acquisition must be obtained by purchase at the following address:

Maps and Publications Sales
605 Suwannee Street
Mail Station 12
Tallahassee, Florida 32399-0450
Phone: (850) 414-4050

Fax: (850) 487-4099
http://www.dot.state.fl.us/MapsAndPublications/manuals/pub-list.htm

This manual may be viewed or printed at no cost by accessing the following FDOT web site. "http://www.dot.state.fl.us/rddesign/utilities/files/utilities.htm" Adobe Acrobat Reader is required to view or print the manual.

1.6 Revisions and Additions

Revisions and additions to this manual and the utility permit form are developed in accordance with the Florida Administrative Procedures Act. The manual and utility permit form are incorporated by reference into Rule 14-46.001.

The State Utility Engineer will also insure that this manual is periodically reviewed by affected parties, including the utility industry, for continued need and updating. Users of the manual may submit any suggestions for improvement or modifications at any time to the State Utilities Engineer at the following address:

State Utilities Engineer
Department of Transportation
605 Suwannee Street
Mail Station 32
Tallahassee, FL 32399-0450
Phone: (850) 414-4364
Fax: (850) 922-9293
http://www.dot.state.fl.us/rddesign/utilities/files/utilities.htm

1.7 Forms

The following form is available from the DISOSS Forms Library through Office Vision:

710-010-85, Utility Permit (See Exhibit J)

Applicants may obtain copies of forms from the Local Maintenance Office, District Maintenance Office, or District Utility Office.

1.8 Training

No special training is required to use this manual. However, some functions addressed in this manual require persons to be skilled or certified in a particular area of expertise. (Some examples of this include herbicide application certification addressed in Chapter 7 or Maintenance of Traffic setup or design addressed in Chapter 8, etc.)

Chapter 2

DEFINITIONS and ACRONYMS

Above Ground Fixed Object: Any non-frangible based object exceeding 4 inches in diameter measured 6 inches above the surface of the immediate area.

Actual Crossing Operation: That phase of the work authorized by the utility permit, when the casing or un-cased carrier pipe is being placed within the physical limits prescribed to determine the required casing length as set forth in the Section “Alternative Methods of Underground Installation.” This will not include preliminary work, such as jacking pit construction, equipment set-up, etc.

ADE: Area Design Engineer.

Adequate: The ability to satisfy a requirement of the FDOT.

American Society of Testing and Materials: ASTM.

Appurtenances: Any and all features or parts of a utility facility, above or below ground, that are installed as a part of the facility, whether primary or secondary to its function.

Area Design Engineer (ADE): A Central Office person responsible to the State Roadway Design Engineer who is assigned as Liaison to a District for technical assistance and coordination of engineering issues.

As-Built Plans: Plans which depict the actual location of a facility after construction.

ASTM: American Society of Testing and Materials.

Auxiliary Lane: The portion of the roadway adjoining the traveled way used for access ramps, speed changes, turning, storage for turning, weaving, truck climbing or other purposes supplementary to through traffic movement.

Border Area: The area between the roadway and the rights-of-way line.

Border Width: A lateral distance required to accommodate roadway infrastructure and is measured from the edge of the traveled way to establish minimum rights-of-way requirements beyond the pavement limits.

CFR: Code of Federal Regulation.

Clear Runout Area: The area at the toe of a non-recoverable slope available for use by an errant vehicle.

Clear Zone: The total roadside border area starting at the edge of the traveled way, available for safe use by errant vehicles. This area may consist of a shoulder, a recoverable slope, a non-recoverable slope, and/or a clear runout area. The desired width is dependent upon the traffic volumes and speeds, and on the roadside geometry. Note: The aforemententioned "border area" is not the same as "border width." Also, see Horizontal Clearance.

Code of Federal Regulation: CFR

Compensable Interest: Having established real estate property rights.

Competent: Legally fit or qualified and adequate for the stipulated purpose.

Conduit: An enclosure for protecting a utility facility (e.g. wires and cables).

Contractor: The individual, firm or company, who is properly licensed in the State of Florida by the State, a County or a City and who is contracting with the FDOT or a Permittee to work, furnish materials, or is in contract as a subcontractor for a prime contractor.

Controlled or Regulated Species: Any undesirable species prohibited by permit, or which grows in such a manner as to inhibit the survival and spread of planted species. Specie designation may be obtained from the District Environmental Management Office and is usually set by State or Local ordinance.

Criteria: Criteria also referred to as a standard, is the FDOT's selected and documented value or range of values, process, specification, or method to be employed, that is intended to be applicable for the majority of conditions and applications for which it is defined, and is based on cost effective and sound engineering principles.

DEP: Florida Department of Environmental Protection.

Design Speed: The maximum safe speed that can be maintained over a specified section of a highway when conditions are so favorable that the design features of the highway govern. Note: The Design speed is not the same as the posted speed along a facility. These speeds were evaluated using a professional driver. It does not relate to actual field operational characteristics or the ability of a typical driver. A design speed is usually selected to be 10 to 15 mph greater than the posted speed. Using a posted speed as a design speed will normally result in providing less than normal intended design safeguards.

District Utility Engineer: The FDOT Utility Engineer or Administrator in charge of utility negotiations at the District level.

Driving Lane: Any traffic, travel or auxiliary lane.

Emergency: A situation or occurrence of a serious nature, developing suddenly and unexpectedly, and demanding immediate action, that will affect a reduction in public safety, disruption of utility service, or damage to FDOT rights-of-way. An emergency situation still requires the use of proper Maintenance of Traffic (MOT) setup, when and where practical.

EMO: The Environmental Management Office, formerly called the Project Development and Environment Office (PD&E).

Erosion Control: Practices used to minimize soil loss from the FDOT's rights-of-way and the discharge of turbid runoff. Erosion control may be regulated by Local, State or Federal regulations.

Equal Material: Products that perform in an equivalent manner in similar circumstances for an intended application.

Exception: An FDOT authorization required when the design values and policy applied by the Utility are not in compliance with FDOT values or policy for the following elements:

- Vertical Clearance
- Horizontal Clearance
- Limited Access R/W Use
- Control Zone Use

Extremely Aggressive:

- Any corrosive environment for a structure situated over water containing more than 6,000 ppm chlorides, regardless of bridge clearance over water.
- Any corrosive environment for a structure situated within one half mile of any major body of water containing more than 12,000 ppm chlorides.
- Any corrosive environment for a structure situated such that a combination of environmental factors indicate that a significant corrosion potential exists.

FDOT: Florida Department of Transportation.

Federal Highway Administration: FHWA.

FHWA: Federal Highway Administration.

FIHS: Florida Intrastate Highway System.

Fixed Object: Any non-frangible based object exceeding 4 inches in diameter measured 6 in above the surface of the immediate area.

Florida Department of Environmental Protection: DEP.

Florida Department of Transportation: FDOT.

Florida Intrastate Highway System: FIHS.

Frangible Base: A design used at the base of poles or signs which allows separation of the top portion from the bottom. The purpose is to minimize vehicular impact damage through the use of designed shear, slip planes or a combination of the two.

Horizontal Clearance: Lateral distance from edge of traveled way to a roadside object or feature.

In-kind: Replacement or restoration without betterment.

Inspector: An authorized representative of the FDOT Local Maintenance Office or Resident Construction Engineer.

Interference with Traffic: The obstructing, impeding, or otherwise disrupting the intended use of the facility.

LA or LA R/W: Limited Access Facility or Rights-of-Way.

Landscaping: Enhancing the aesthetics of the facility through the use of vegetation, contouring, or decorative fixtures including irrigation, or other features pursuant to Rule 14-40, Florida Administrative Code.

Landscape Manager: FDOT District Representative responsible for design, review and coordination of landscaping issues.

Landscape Permittee: An individual, corporation, or municipality currently possessing a departmentally approved Highway Landscaping Maintenance Memorandum of Agreement, or Permit for Landscaping on State Road rights-of-way pursuant to Rule 14-40, Florida Administrative Code.

Limited Access Facility or Rights-of-Way (LA or LA R/W): A street or highway, or appurtenances thereof, especially designed for through traffic, and over, from, or to which owners or occupants of abutting land or other persons have no right or easement of access, light, air, or view by reason of the fact that their property abuts upon such limited access facility or for any other reason.

Locates: An information gathering process which may or may not involve a formal survey to identify and define the position of a utility, vertically and horizontally. This information is used to determine the proximity of a utility to other features so as to prevent conflict during construction.

Maintenance Engineer: An FDOT Maintenance Engineer or designee who approves Utility Permits, inspects, and has the authority to revoke said permits within his/her area of responsibility. (This person is usually the Local FDOT Maintenance Engineer of the area in which the permitted Utility work is to be performed).

Major Crossing: Pipe crossings 8 in or greater in outside diameter; crossings under limited access facilities; crossings requiring well point dewatering; and other crossings of an unusual and difficult nature as determined by the Local Maintenance Engineer on a case by case basis.

Manhole: An opening in an underground system which workmen or others may enter for the purpose of making installations, inspections, repairs, connections and tests.

Median: The portion of a divided highway or street separating the traveled ways for traffic moving in opposite directions.

Maintenance of Traffic (MOT): The method by which traffic control through a work zone will be handled.

Manual On Uniform Traffic Control Devices (MUTCD): A document produced by the National Committee On Uniform Traffic Control Devices for the purposes of unifying standards applicable to different classes of roads and street systems.

MOT: Maintenance of Traffic.

MUTCD: Manual On Uniform Traffic Control Devices.

National Pollutant Discharge Elimination System (NPDES): The NPDES program is administered by the US Environmental Protection Agency. This program requires a permit for storm water discharge into waters of the US from industrial activities which disturb 5 or more acres as of April, 1996. This area requirement is subject to change. An individual or general permit may be used. However, a general permit as defined in the September 25, 1992 Federal Register is applicable for most FDOT functions.

Non-Operating Rail Corridor: Any FDOT owned linear rights-of-way previously used as a railroad corridor where rail service has been discontinued.

Non-Restricted R/W Area: An area where sufficient border width exists to permit utilities to locate above ground fixed objects in compliance with minimum clear zone requirements.

NPDES: National Pollutant Discharge Elimination System.

Occupation, Safety and Health Administration: OSHA.

One-Call: This is the term applied to the clearinghouse designed to prevent disruption of utility services and operating under the provisions of Chapter 556, Florida Statutes (Also referred to as Sunshine State One-Call, Inc.).

Operating Railroad Corridor: Any FDOT owned railroad corridor that contains one or more operating railroads.

OSHA: Occupation, Safety and Health Administration.

Pavement: A hardened surface used as a paved travel way, normally an asphaltic or cementitious concrete surface designed to carry the anticipated traffic for a specified design period.

PD&E: This is the old FDOT terminology still found in some publications referring to the Project Development and Environment Office. This Office is now called the Environmental Management Office or EMO.

Permit Application Package: FDOT Utilities Form No. 710-010-85 (See Exhibit J) and all support documentation. Refer to Chapter 3 of this manual.

Permittee: A Utility Agency/Owner (permit holder) permitted by the FDOT to construct and maintain its facilities within the FDOT's transportation facilities, and responsible for any damages resulting from the issuance of said permit. A consultant or contractor performing work for the UAO is not a Permittee.

Placed Out-of-Service (Deactivated): The wording used when a Permittee is allowed to leave their facilities in place and within the FDOT's rights-of-way after the facility is no longer active. This is allowed only by mutual agreement when immediate removal would cause greater disruption of the public’s use of the facility than obstruction by allowing it to remain. Allowing a facility to be left in place is considered temporary and must be removed at any time in the future at the request of the FDOT.

Qualified Welder: A person who has been tested and demonstrated his ability to produce welds that meet the requirements of Sections two (2) and three (3) of the American Petroleum Institute Standard 1104 or Section I, Appendix C, CFR PART 192.

Relining: A process exclusive to the repair of the wall linings of pipes and conduits to prevent ground water seepage into the system and not to be misconstrued with re-stringing of wires or cables on poles or inserting facilities into ducts.

Relocation: Any and all work associated with the adjustment of a utility facility (horizontally or vertically).

Resident/Project Engineer: The FDOT Resident/Project Engineer in charge of FDOT Construction Projects.

Restricted R/W Area: An area where insufficient border width exists to permit utilities to locate above ground fixed objects in compliance with minimum clear zone requirements.

Resurfacing, Restoration, and Rehabilitation (RRR): Work undertaken to preserve and extend the service life of an existing highway and enhance highway safety.

Rights-of-Way (R/W): Any part or access to the FDOT's Transportation Facility, above, at the surface, or below the ground**.**

Rights-of-Way User: The Individual, Firm, Company or Governmental Agency having a facility within any part of the FDOT's Transportation Facility.

Routine Maintenance: The regular or normal maintenance of one's facilities.

RRR: Resurfacing, Restoration, and Rehabilitation

R/W: Rights-of-Way.

Scenic Enhancement Areas: Areas or structures set aside by statute or local ordinance for the preservation of environmental or cultural resources.

Scenic Highways Coordinator: A person located in the District EMO Office responsible for coordination and review of Corridor Management Plans.

Subsurface Utility Engineering (SUE): A process of locating subsurface utilities and typically implies the use of non-destructive techniques for location and vacuum excavation.

SUE: Subsurface Utility Engineering.

Standards: A standard also referred to as criteria, is the FDOT's selected and documented value or range of values, process, specification, or method to be employed, that is intended to be applicable for the majority of conditions and applications for which it is defined, and is based on cost effective and sound engineering principles.

State Utility Engineer: The individual in charge of promulgating and developing FDOT policy and procedures for Utility Accommodation on FDOT rights-of-way.

TCP: Traffic Control Plan.

Through Traveled Way: The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

Traffic Control Plan (TCP): Documentation of how a safe flow of traffic will be conducted through an area in which construction or maintenance activities are being performed. Documentation shall include defining all materials, traffic control devices, and activities required to accomplish this task.

Transportation Facility: Per Section 334.03(31), Florida Statutes, defined as any means for the transportation of people and property from place to place which is constructed, operated, or maintained in whole or in part from public funds. The term includes the property or property rights, both real and personal, which have been or may be established by public bodies for the transportation of people and property from place to place.

Traveled Way: The portion of the roadway for the movement of vehicles, exclusive of shoulders.

UAM: Utility Accommodation Manual.

UAO: Utility Agency/Owner.

United States Code: U.S.C.

U.S.C.: United States Code.

Utility Accommodation Manual: UAM.

Utility Agency/Owner: UAO**.**

Utility Facilities: All privately, publicly or cooperatively owned lines, facilities and systems for producing, transmitting or distributing communications, power, electricity, light, heat, gas, oil, crude products, water, steam, waste and storm water not connected with highway drainage, and other similar commodities, including television transmission signals, publicly owned fire and police signal systems and street lighting systems, which, directly or indirectly serve the public or any part thereof. The term "Utility" shall also mean the UAO or Permittee, inclusive of a wholly owned or controlled subsidiary. This term does not include wireless telecommunications providers who provide cellular or digital communications to the public.

Vegetation: All trees, shrubs, vines, legumes, grasses or other plant material existing within and adjacent to FDOT’s rights-of-way.

Chapter 3

UTILITY PERMIT

3.1 Utility Permit

A Utility Permit Application (see Exhibit J) must be submitted by the Utility Owner/Agency, per Section 337.401 Florida Statutes. An Engineer or Contractor may prepare and process a permit application for a Utility Owner, but shall not be identified as the Permittee.

A permit must be approved or authorized by the FDOT before any utility is installed on the FDOT rights-of-way, whether it is for aerial or underground installations or attachment onto bridge structures, except as noted in this Manual. Permit Form 710-010-85 (see Exhibit J) may be obtained by the applicant from the Local Maintenance Office, District Maintenance Office, or District Utility Office. Any deviation from the approved permit shall be subject to the approval of the Local Maintenance Engineer, or designee, prior to installation. Deviations from FDOT Design criteria may require an exception.

During an emergency situation, the UAO should protect the public safety by making necessary repairs or adjustments complying as much as is practical with the requirements of this manual. No advance permit approval is required. However, permits for pavement cuts shall be submitted within 5 business days after the repairs are completed. This does not limit any permit requirements by other agencies.

If the Permittee’s work operations encounter remains of an archaeological or historic nature, all earth disturbing activity shall be temporarily discontinued in the immediate vicinity of the discovery and the Permittee shall notify the approving Maintenance Engineer's Office of the discovery. The approving Maintenance Engineer shall notify the Staff Archaeologist at the FDOT, Environmental Management Office in Tallahassee to determine the disposition thereof. No work will resume until direction is given by the approving Maintenance Engineer.

A copy of the approved permit application package must be available at the job site at all times.

3.2 Permit Application

3.2.1 Each copy of the permit application shall contain at a minimum, plans or information showing the following:

(A) Schematic plans of the proposed installation (not necessarily to scale) showing the beginning and ending project limits.

(B) The horizontal offset from a well defined feature of the Transportation Facility (to be determined by the permit Engineer) to the proposed utility installation.

(C) The rights-of-way limits and limited access line.

(D) As applicable, pavement/rail width and distance from edge of pavement/rails to utility.

(E) The roadway/railroad section and mile post numbers, station numbers and bridge number (if applicable).

(F) Material, function, type and size such as 12" HDPE 500 maximum psi plastic gas or sewer pipe, or metal 2X3 foot conduit for (power with voltage).

(G) All utility poles or other aboveground facilities and other pertinent details. With the exception of utility or single pole appurtenances mounted 15 ft or higher above the ground, appurtenances larger than 8 cubic ft must have their location and size, shown on the permit.

(H) One or more typical cross sections to adequately reflect the underground location of the utility facility.

(I) All known involved utilities in the proposed installation area shall be shown. However, if only aerial facilities requiring no additional poles are involved, then only aerial facilities need be shown on the permit drawing.

(J) If overhead or underground facilities involve only one side of the rights-of-way, then only involved utilities on that side of the rights-of-way need to be shown on the permit drawing.

(K) In all cases, the Permittee shall list all known rights-of-way users in the installation area on the permit form and notify each of them by copy of the permit drawing, whether they are involved or not.

(L) The minimum vertical clearance above or below the pavement shall be shown.

(M) The approximate distance and direction to either the nearest town, major road intersection, bridges, or railroad crossings.

(N) Other significant physical features such as vegetation, wetlands or bodies of water shall be indicated on the plans. The District Landscape Manager may be contacted for assistance to determine any potential impact to FDOT vegetation.

(O) A simple key map showing the location of this proposed facility should be included.

(P) When the proposed utility work requires MOT, the permit application package must include a TCP. See Chapter 8 for specific criteria.

(Q) In order to document existing conditions of the work area prior to any Utility work, a minimum of one and maximum of six pictures, based on the complexity of the project, must be submitted with the application as a remedy for claims or final approval concerns. The number of pictures can be minimized (or the requirement waived) through discussion with the Permit Engineer.

3.2.2 For attachment to structures, the application shall include all applicable construction plans and specifications for the accommodation of the Utility.

3.2.3 When the Permittee is not a corporation, the owner's signature must be on the permit. Signatures must be original. The names and titles of all persons signing the permit application must be typed or printed legibly to the left of their signatures.

3.2.4 When the Permittee is a corporation, the signature of either the owner or an approved representative, whose name or position/title is on file with the Department for that corporation, must appear on the permit. The signatures must be original. The names and titles of all persons signing the permit application must be typed or printed legibly to the left of their signatures.

3.3 Processing

3.3.1 The applicant will submit 2 originals and 2 copies of permit application packages to the FDOT Local Maintenance Office in the area in which the work is to be performed.

3.3.2 The Local Maintenance Engineer or designee is authorized to approve permit applications, except as specified elsewhere in this manual. Those applications on which the Local Maintenance Engineers are not authorized to approve, will be forwarded to the District Maintenance Engineer for action.

Exceptions to the Limited Access Policy must be approved by the State Highway Engineer or designee. Upon approval, executed permits will be distributed to the

applicant, permits inspector, the Local Maintenance Engineer or designee and the District Permit Engineer's Office file.

3.3.3 Each permit shall be processed in an expeditious manner, in order to minimize any unnecessary delays for the applicant. The Local Maintenance Office will notify the applicant if processing is anticipated to exceed 30 days, when installations fall within areas in which no work is scheduled per the Five Year Work Program. In all cases, the permit will be processed in accordance with Florida Statute 120 and requirements found within this Manual. Permits will be approved and issued if all requirements of this manual are met.

3.3.4 For installations in FDOT rights-of-way affected by the FDOT Five Year Work Program or safety improvement projects (excluding permits on projects not in the production cycle which are covered in Section 3.3.4), the Local Maintenance Office will submit the permit application to the District Maintenance Office or designee.

The District Maintenance Office will be responsible for the coordination and tracking of the permit application. Coordination by Maintenance includes the District Utilities Office, Environmental Office (Landscape Manager, Scenic Enhancement, Contamination Impact Coordinator), and the Structures Office as appropriate.

The District Maintenance Office will send the permit application to the District Utility Office for their recommendation. The District Utility Office will consult with all applicable District Offices before making a recommendation back to the District Maintenance Office. The District Maintenance Office will approve or deny the permit application based on the District Utility Office's recommendation and return it to the Local Maintenance Engineer or designee for distribution and entering into the permit database. The District Maintenance Office will notify the applicant if processing is anticipated to exceed 30 days.

The FDOT Maintenance Office will be responsible for coordinating permit requests with the FDOT Construction Office for projects which are scheduled within the Five Year Work Program.

3.3.5 For projects which are in the plans production cycle, all permits are to be submitted to the Local Maintenance Office. The Local Maintenance Office will obtain a permit number and will send the permit package to the District Maintenance Office. The District Maintenance Office will approve or deny the application, based on coordination and review by the District Utility Office and the Local Maintenance Engineer or designee. The Local Maintenance Office will return the application package to the applicant or will notify the applicant if processing is to exceed 30 days.

3.3.6 All permit applications involving scenic enhancement areas are to be reviewed and approved by District Maintenance Engineer or designee upon consultation with the District Scenic Enhancement Coordinator.

3.3.7 All permit applications involving attachment onto bridge structures shall be reviewed and recommended for approval or denial by the District Structures and Facilities Engineer prior to approval by the District Maintenance Engineer or designee.

3.3.8 Where a permit involves the attachment to a structure of a utility facility carrying hazardous material (flammable, toxic or corrosive), the application will be referred to the District Maintenance Engineer and the District Structures Engineer for review and comment prior to approval by the Local Maintenance Engineer or Designee.

3.3.9 The applying Permittee shall notify, in writing, all known involved Utility Agencies using the rights-of-way at the location of the proposed installation. This notification shall state the applicant's intentions in order to determine any objections caused by the proposed installation. Any objections to the applying Permittee's proposed construction by affected Utility Agencies must be made in writing and forwarded to both the applicant and to the applicable Local Maintenance Engineer within 10 days of the applicant's notification letter. Such objections must be specifically defined.

3.3.10 All permit applications for rights-of-way covered by easements from U.S. Forest Service shall be forwarded to the District Maintenance Engineer for coordination with the U.S. Forest Service.

3.3.11 Utility Permits on operating railroad corridors will be handled the same way as other utility permits and subject to prior real estate rights.

For the South Florida Rail Corridor:

(A) Along with the Standard Permit Application, the pertinent standard Railroad Application Package shall become part of the total package. All Permittees must follow the instructions on the Application Package.

(B) The Local Maintenance Engineer or Designee will forward 4 copies of the package to the CSX Railroad for their concurrence/approval.

(C) No permit will be approved by CSX without receipt of their processing fee. Per agreement with CSX, the sole responsibility of the Department is to forward the application package and processing fee when supplied by the Permittee. It will be CSX's responsibility to collect their fee from the Permittee if not included in the application package.

(D) After receipt of approved 4 packages from the CSX and the FDOT permit approval, then the Local Maintenance Engineer or Designee will distribute the permit as appropriate.

Two copies and one original of both the CSX package and the permit will be submitted to:

Florida Department of Transportation - District Four
Manager, South Florida Rail Corridor
3400 West Commercial Blvd.
Fort Lauderdale, Florida 33309-3421
Phone: 1-800-930-3368

3.3.12 The Permittee will notify the approving authority upon completion of the utility construction. The approving authority or designee will complete page 2 of the Permit Form 710-01-85 and file it in the District Permit Engineer's Office with a copy sent to the Permittee.

3.4 Signing & Sealing Utility Plans

The following applies:

(A) Traffic Control Plan (TCP) - When FDOT TCP standards must be significantly compromised and a true, alternate TCP is required, it must be prepared, signed and sealed by a qualified, registered engineer. See Chapter 8.

(B) Any installation which requires a structural modification to an FDOT facility must be signed and sealed. An example of this would be a request to hang a utility facility from an existing bridge.

(C) Joint Participation Agreements (JPA) - Documents for JPA's prepared for Utilities by their own engineers (exempt under Chapter 471, Florida Statutes) do not require signing and sealing. However, documents prepared by an Engineering Consultant for the Utility must be signed and sealed.

Chapter 4

REQUIREMENTS FOR PERMITS

4.1 Installations Requiring Permits

4.1.1 Permits are required for all underground installations and all overhead lines and crossings, except where noted in Section 4.2.

4.1.2 Permits are required for all additional facilities when:

(A) It is necessary to place a pole within the rights-of-way where there is not an existing pole line.

(B) It is necessary to place a pole adjacent to a buried cable where the existing permit does not include a pole line.

(C) It is necessary to place a pole beyond the limits of an existing approved pole line. For purposes of this provision, the limits of an existing approved pole line shall mean the distance from the edge of the pavement/rails to the approved pole line plus a maximum of 10% of that distance, but still within the rights-of-way and no closer to the edge of the pavement/rails. The outside edge of the through travel lane shall be the point of reference in lieu of the edge of pavement/rails.

4.1.3 Permits are required for all above ground facilities placed in connection with underground installations when not included in the original permit. These include marker poles and riser poles, including pole mounted telephone closures for test or splice purposes.

4.1.4 Permits are required when installing a transportation facility lighting system, including installation on existing poles where existing poles are there by virtue of a permit.

4.1.5 Permits are required for the installation of a private or area light on an existing pole within the rights-of-way where the light pattern, which shall conform to Highway Lighting Standards, is to be directed toward the pavement.

A permit is also required if a new pole is to be set within the rights-of-way to accommodate a private or area light.

4.1.6 Permits are required when existing facilities are to be relocated permanently to another location within the rights-of-way, whether caused by a betterment program for the rights-of-way user, or by FDOT construction.

4.1.7 Permits are required for improvements or betterment requiring a physical change of existing facilities, except for routine maintenance or minor alterations such as changes in communications cables, transformer capacity, wire size of secondary circuits and primary circuits or adding additional wires to an existing circuit of a 1 mile segment or less of an existing utility installation. However, a permit will be required for any alteration or addition to the utility installation (other than routine service drops or span guys) which will cross a Transportation Facility either overhead or underground. Normally, such alterations or additions will not be basis for requiring relocation of the existing facility.

4.1.8 Permits are required for inserting or relining of any utility facility, by an unpermitted UAO.

4.1.9 Permits are required if any pavement is to be cut, including driveways or sidewalks, on FDOT rights-of-way, unless covered by a current permit.

4.2 Installations Not Requiring Permits

4.2.1 Permits are not required for placing new poles within an existing permitted facility pole line unless noted otherwise in this manual. The fact no permit is required does not eliminate the requirement to comply with RRR criteria. For example, when horizontal clearance criteria are not complied with, an exception must be obtained in accordance with Chapter 13 of the UAM. Where timeliness of installation is essential, and an exception is required, the Utility may install the pole at their risk, prior to obtaining an exception. An exception request must be submitted to the FDOT within 14 calendar days of final installation of the pole. Failure to comply or obtain exception approval will subject the Utility to the requirement of immediate removal of the pole, at the Utility's sole cost and expense, including any necessary legal fees born by the FDOT in seeking compliance.

4.2.2 Permits are not required for any in-kind replacements of existing poles.

4.2.3 Permits are not required for service drops or span guys emanating from and/or attached to poles properly covered by an existing permit, except for operating rail corridors.

4.2.4 Permits are not required for underground service connections, provided that they do not cross or begin in the pavement and trenching is at a right angle to the pavement. However, notice will be given to the affected Local Maintenance Engineer prior to construction in all instances, and the Permittee shall notify all known underground

Utility Agencies of the pending excavation at least 48 hours in advance. (This does not apply to operating rail corridors).

4.2.5 Permits are not required for temporary relocation as directed by the FDOT Resident/Project Engineer during FDOT construction projects.

4.2.6 Permits are not required for inserting or relining of any utility facility into an existing conduit or pipeline made by the Permittee, provided there is no pavement cutting. The Permittee shall give 48 hours notice, and identify limits of work.

4.3 Additional Permit Requirements

4.3.1 The Permittee shall give 48 hours advance notice to the approving Local Maintenance Engineer prior to any construction or excavation, except in emergency situations.

4.3.2 The Permittee should be aware that the Utility Permit does not authorize the use of overweight vehicles on the State Highway System. Permits for overweight vehicles must be obtained from the Office of Road Use Permits in Tallahassee. Permits for overweight and over dimensional vehicles are covered by Rule Chapter 14-26, Florida Administrative Code.

4.3.3 The Permittee should be aware that Section 335.15, Florida Statutes requires notification of temporary closing of an FDOT roadway. Whenever any road on the State Highway System is repaired, reconstructed or otherwise altered in a manner which necessitates the closing of one or more traveled lanes of the roadway for a period of time exceeding 2 hours, the party performing such work shall give notice to the local law enforcement agency and Local Maintenance Engineer, within whose jurisdictions such roadway is located, prior to commencing work on the project. The requirement of prior notification shall be waived only when the closing of one or more lanes is required for emergency conditions. The Department's policy is to provide notification a minimum of 48 hours before closure to allow sufficient time for public service announcements and local agency response.

4.3.4 When construction deviates from the proposed design, as-built plans showing such deviations will be required by the Local Maintenance Engineer for all installations. Required as-built plans for facilities whose location is confidential will be maintained at the offices of the Permittee.

4.3.5 All new or replaced underground facilities within the rights-of-way shall be made detectable using techniques available in the Industry.

4.3.6 Minimum horizontal offset or vertical clearance dimensions shall be the greater of that required by either the UAM, Rule Chapter 14-57, Florida Administrative Code for railroads, or where applicable, the clearance criteria for the South Florida Rail Corridor contained in Policy Statement 000-725-003, South Florida Rail Corridor Clearance Policy as follows:

SOUTH FLORIDA RAIL CORRIDOR CLEARANCE POLICY

Grade-separated highway or pedestrian crossings or any other structure over the South Florida Rail Corridor shall be designed and constructed in such a manner that provides for an opening for the passage of tracks or fixed guide ways that is at least 24 ft 3 in high, measured from the top of the highest existing rail or proposed rail for the entire required clear span distance and of sufficient width to clear span the ultimate build-out track configuration reflected in the Track Master Plan at all points along that portion of the corridor that lies between Milepost SX964.9 at West Palm Beach and Milepost 1036.3 at Hialeah and all of Spur Line "B" between Milepost 1036.3 at Hialeah and end-of-line at Miami Intermodal Center at or near 21st Street. This vertical clearance is for new construction, provides for eventual installation of 25 kV catenary, allows for up to 1 ft of track raise, and is based on the American Railway Engineering Association recommended load gauge of 21 ft.

More particularly, any proposed structure over the South Florida Rail Corridor shall be designed and constructed so as to provide a horizontal clear span of a minimum of 100 ft but not less than 25 ft from the center line of the outermost existing or proposed tracks according to the Track Master Plan at all locations in the South Florida Rail Corridor.

4.4 Permit Non-compliance

When the Permittee fails to complete all requirements contained within this Manual or features of the installation as specified in the permit, the following course of action shall be implemented.

In preparation for a breach of contracts action:

(A) The approving Maintenance Engineer shall give written notice, by Certified Mail with return receipt, to the Permittee advising of the specific deficiencies and/or violations and requesting compliance with the permit provisions.

(B) If no response is received and the deficiencies and/or violations have not been corrected within 30 days, then notification shall be sent, by Certified Mail with return receipt. This notice shall advise the Permittee that he is in non-conformance, and unless the violations are corrected within 30 days of receipt of the notice, the permit shall be revoked and the Permittee will be

required to remove the facilities which are in noncompliance. The notice shall further advise that the FDOT'S revocation of the permit shall become final Agency action within 30 days of receipt of the notice, unless the deficiencies and/or violations are corrected or an administrative hearing is requested.

Document all acts of noncompliance that have occurred with regard to each permit, including failure to respond to notifications of noncompliance. A copy of all permit documentation, written correspondence, memoranda or notes, certified mail receipts, etc., maintained in the District Office shall be forwarded to the Office of the General Counsel and the Secretary of Transportation in Tallahassee, if an administrative hearing is requested.

Chapter 5

ACCOMMODATIONS STANDARDS

5.1 Basic Requirements

5.1.1 The basic requirements governing location of utility installations are described in the location criteria section of this manual. The primary concerns in the design and location of utility installation are the preservation of the transportation facility and the safety of the transportation facility users. All Utility agencies shall give full consideration to sound engineering principles and economic factors.

5.1.2 In situations where underground and overhead utilities occupy the same side of the transportation facility, the overhead facility should normally be placed on the outside of the underground facility and as close to the rights-of-way limits as practical, to provide as much clear zone or horizontal clearance as practical.

Criteria have been developed with the objective of providing a recovery area for the vehicles that might leave the roadway. The criteria are based on limited empirical data which was then extrapolated for a wide range of conditions. The criteria represents a reasonable degree of roadway safety, but they are neither absolute nor precise. These criteria must be applied with judgement. In some cases based on project features and operating conditions, the clear zone can be reduced by the District Design Engineer from that shown in the tables and figures. In all cases, the most clear zone that can be practically provided is desirable. It is critical that a Utility determine as soon as practical what clear zone values have been set for all locations along a project.

In cases where more than one UAO proposes an aerial installation on the same side of the FDOT rights-of-way, a joint-use arrangement must be pursued by the Utility Agencies.

Only single pole lines shall be permitted on each side of FDOT's rights-of-way. Exceptions may be granted pursuant to Chapter 13 of this Manual.

In those situations where a single UAO proposes to install a pole line on both sides of the rights-of-way, both pole lines must be available for joint use in order to accommodate other above ground UAO facilities.

5.1.2.1 Table - Horizontal Clearance Requirements For Light Poles (New Construction).

CONVENTIONAL LIGHTING PLACEMENT - Not in the median except in conjunction with barriers that are justified for other reasons.
Rural (Flush Shoulders): **20 ft from the travel lane, 14 ft from auxiliary lane (may be clear zone width when clear zone is less than 20 ft).**
Urban (Curb and Gutter): **From right of way line to 4 ft back of face of curb (may be 2.5 ft back of face of curb when all other alternatives are deemed impractical). Placement within sidewalks shall be such that a minimum unobstructed sidewalk width of 32 in is provided per ADA requirements. (Sidewalk width is measured exclusive of the curb width.)**
HIGH MAST LIGHTING - Outside of the clear zone unless shielded.

5.1.2.2 Table - Horizontal Clearance Requirements For Non-Frangible Above Ground Fixed Objects (New Construction)

Shall not be located within the limited access right of way. **Shall not be located in the median.**
Flush Shoulders: **As close as practical to the Right of Way line.* If the distance from the edge of the traveled way is less than the clear zone width in Table 5.1.2.3, the Utility must apply for an Exception.**
Curb or Curb and Gutter: **As close as practical to the Right of Way line.* If a minimum distance of 4 ft from the curb face to the fixed object is not practical, the Utility must apply for an exception. Placement within sidewalk shall be such that a minimum unobstructed sidewalk width of 32 in is provided. (Sidewalk width is measured exclusive of curb width.)**
*** "As close as practical to the Right of Way line" is determined by conditions such as, but not limited to:** **- Aerial encroachment** **- NESC, ADA, or other State or Federal applicable codes/regulations** **- Conflicts with other existing overhead or underground facilities** **- Trees on adjacent private property (where adequate future trimming would require encroachment on private property)** **- Down guying requirements.**

Table - 5.1.2.3 Clear Zone Widths for flush shoulders on a straight alignment with slopes 1:4 or flatter. (New Construction rural or urban)

CLEAR ZONE WIDTH (FEET)				
POSTED SPEED mph	$ 1500 AADT*		< 1500 AADT*	
	TRAVEL LANES & MULTI-LANE RAMPS	AUXILIARY LANES & SINGLE LANE RAMPS	TRAVEL LANES & MULTI-LANE RAMPS	AUXILIARY LANES & SINGLE LANE RAMPS
< 45	18	10	16	10
45	24	14	20	14
50	24	14	20	14
55	30	18	24	14
> 55	36	24	30	18

* AADT = Mainline 20 years projected annual average daily traffic.

Clear zones must be adjusted for the effects of shoulder slopes steeper than 1:4 and the existence of curves. Adjustments due to shoulder slope are contained in Figure 5.1.2.3. Adjustments for curves are contained in Table 5.1.2.4.

Clear zone widths are measured from the edge of the travel way.

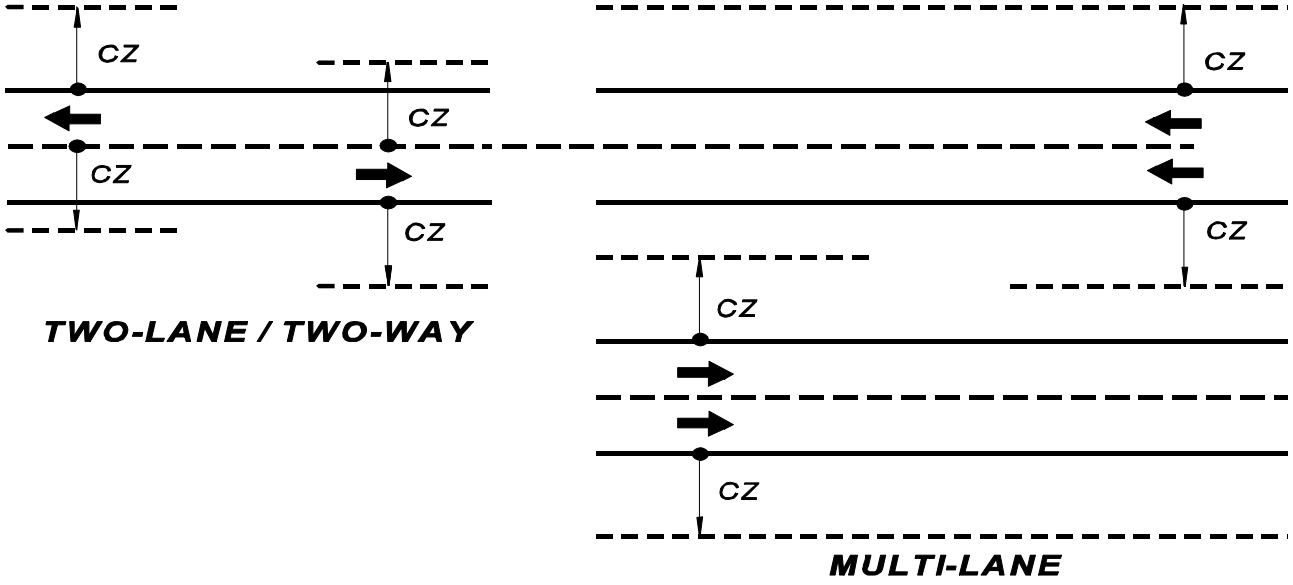
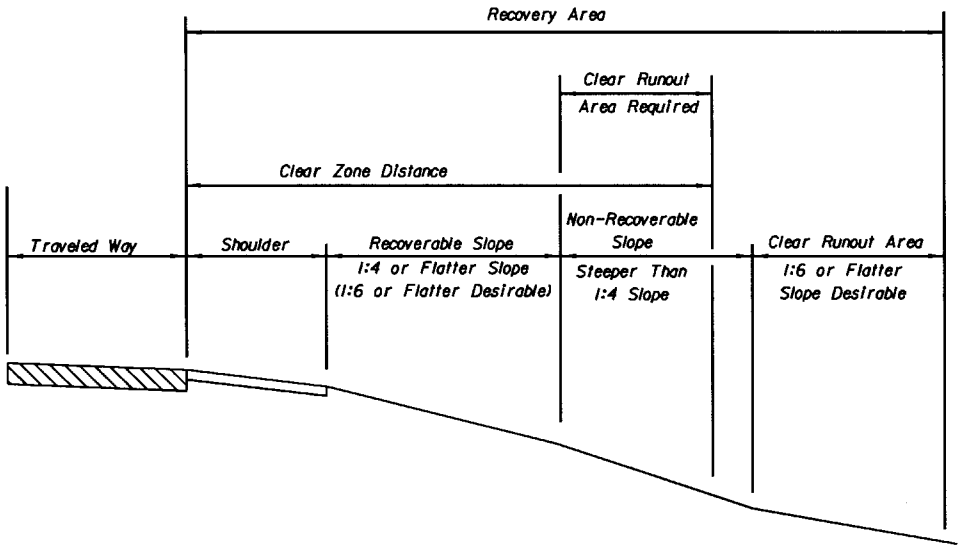


FIGURE 5.1.2.3 - RECOVERY AREA AND CLEAR ZONE DISTANCE



NOTE: The above shown slope values are typically found in designs but are not intended to reflect a standard design.

This figure illustrates a recoverable slope followed by a non-recoverable slope. Since the clear zone distance extends into the non-recoverable slope, the portion of the clear zone distance on such slope may be provided beyond the non-recoverable slope if practical. This clear run out area would then be included in the total recovery area. The clear run out may be reduced in width based on existing conditions or site investigations.

If a non-recoverable slope encroaches the clear zone, then a clear run out area should be provided beyond the toe of the slope equal to the width of the encroachment. A minimum of 10 ft of clear run out area beyond the toe of the slope should be provided.

Such a variable sloped typical section is often used as a compromise between roadside safety and economics. By providing a relatively flat recovery area immediately adjacent to the roadway most errant motorists can recover before reaching the steeper slope beyond. Every reasonable attempt should be made in coordinating utilities so as to minimize the installation of above ground fixed objects within the clear zone.

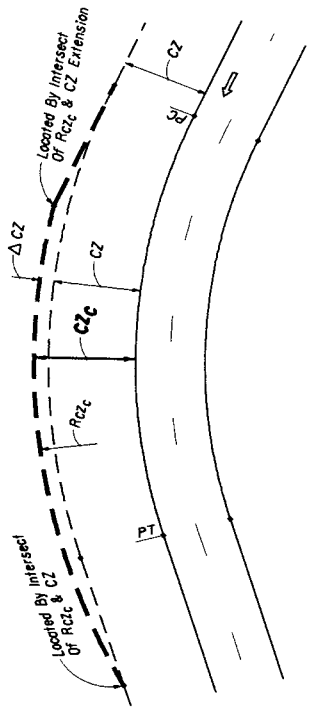
5.1.2.4 TABLE - CLEAR ZONE WIDTHS FOR CURVED ALIGNMENTS ON HIGHWAYS WITH FLUSH SHOULDERS

TABLE 5.1.2.4 Clear Zone Widths for Curved Alignments on Highways with Flush Shoulders

CLEAR ZONE OF CURVED ALIGNMENT (CZc), FEET

Posted Speed (Vmph) and Clear Zone (CZ, Feet)

Radius (R)	D	30			35			40			45			50			55			60			65			70		
	Tangent	10	16	18	10	16	18	10	16	18	14	20	24	14	20	24	14	18	24	30	18	24	30	36	18	24	30	36
22918	0°15'	10	16	18	10	16	18	10	16	18	14	20	24	14	20	24	14	18	25	31	18	25	31	37	19	25	31	37
11459	0°30'	10	16	18	10	16	18	10	16	18	14	21	25	14	21	25	15	19	25	31	19	25	31	38	19	25	32	38
7639	0°45'	10	16	18	10	16	18	10	16	19	15	21	25	15	21	25	15	19	25	32	19	26	32	39	20	26	33	39
5730	1°00'	10	16	18	10	16	19	10	17	19	15	21	25	15	21	26	15	20	26	32	20	27	33	40	20	27	34	40
3820	1°30'	10	16	18	10	17	19	11	17	19	15	21	26	15	22	26	16	20	27	33	21	27	34	41	21	28	35	42
2865	2°00'	10	17	19	11	17	19	11	17	19	15	22	26	16	23	27	16	21	28	35	21	29	36	43	22	29	37	44
2292	2°30'	11	17	19	11	17	20	11	17	20	16	22	27	17	24	28	17	21	29	36	22	30	37	44	23	31	38	46
1910	3°00'	11	17	19	11	17	20	11	18	20	16	23	28	17	24	29	17	22	30	37	23	31	38	46	24	32	40	48
1637	3°30'	11	17	19	11	18	20	11	18	20	16	23	28	18	25	30	18	23	30	38	24	32	40	48	25	33	42	50
1432	4°00'	11	17	20	11	18	20	12	18	21	17	24	29	18	25	30	18	23	31	39	25	33	41	49	26	35	43	52
1348	4°15'																								26	35	44	53
1146	5°00'	11	18	20	11	18	21	12	19	21	17	25	30	18	26	31	19	25	33	41	26	35	44	52				
1091	5°15'																				27	36	44	53				
955	6°00'	11	18	20	12	19	21	12	20	22	18	26	31	19	27	33	20	26	35	43								
881	6°30'																21	27	36	44								
819	7°00'	12	18	21	12	19	22	13	20	23	19	27	32	20	28	34												
716	8°00'	12	19	21	12	20	22	13	21	23	19	28	33	21	30	36												
694	8°15'													21	30	36												
637	9°00'	12	19	21	13	20	23	13	21	24	20	29	34															
573	10°00'	12	19	22	13	20	23	14	22	25	21	29	35															
559	10°15'										21	30	35															
521	11°00'	12	20	22	13	21	24	14	22	25																		
477	12°00'	13	20	23	14	21	24	15	23	26																		
441	13°00'	13	20	23	14	22	25	15	24	27																		
432	13°15'							15	24	27																		
409	14°00'	13	21	23	14	22	25																					
358	16°00'	13	21	24	14	22	25																					
323	17°45'				15	24	27																					
318	18°00'	14	22	25																								
286	20°00'	14	22	25																								
260	22°00'	14	23	26																								
239	24°00'	15	24	27																								
231	24°45'	15	24	27																								



Step 1: Select the "Tangent" CZ width for the appropriate condition from Table 5.1.2.3.
Step 2: In the table above, locate the "Posted Speed" and "Tangent" CZ width that matches the speed and CZ width from step 1.
Step 3: Move down the column below the appropriate tangent value to where it intersects with the radius under consideration, to find the adjusted CZc (width)

Example: Conditions, Posted Speed = 45 mph, AADT = 1800, Two lane highway, curve radius = 830.
From Table 5.1.2.3 (step 1) Tangent CZ = 24 feet.
From the table above the adjusted CZc width = 32 feet.

Note: When the radius (R) exceeds 3000 feet, no control zone exists and control zone requirements do not apply.

5.1.3 A second pole line to support illumination may be allowed where the need for the illumination is properly documented, provided traffic safety requirements are met.

Where feasible and practical, luminaries should be attached to utility poles which meet the offset criteria, thereby eliminating unnecessary numbers of poles along FDOT's facilities.

5.1.4 Scenic enhancement shall be considered on permit applications. The type and size of utility facilities, along with the extent to which they are permitted along or within FDOT rights-of-way, can materially alter the scenic quality, appearance and view of the transportation facility and adjacent areas. Therefore, additional controls are applicable in certain areas that have been acquired or set aside for their scenic quality. Such areas include scenic strips, overlooks, rest areas, recreation areas, and the FDOT rights-of-way within the limits of public parks and historic sites.

New underground utility installations will be permitted within such lands where they do not require extensive removal or alteration of trees or other natural features visible to the transportation facility user and where they do not impair the visual quality of the lands being traversed. New aerial installations are to be avoided at such locations where there is a feasible and prudent alternative to the use of such lands by the aerial facility. Exceptions will be considered only where:

(A) Other locations which are unusually difficult and unreasonably costly or are more undesirable from the standpoint of visual quality.

(B) Underground is not technically feasible or is unreasonably costly.

(C) The proposed installation will employ suitable designs and materials which give adequate attention to the visual qualities of the areas being traversed.

These controls shall also be followed in the location and design of utility installations that are needed for transportation facility purposes, such as continuous highway lighting or to serve Weight Stations, Rest Areas, or Recreation Areas.

5.1.5 All new or relocated longitudinal underground utility facilities shall be placed outside the toe of the front slope, except where no other safe and practical alternatives are available. Except within operating Rail corridors, all new or relocated longitudinal underground utility facilities shall be placed between the toe of the front slope and the rights-of-way, except where no other safe and practical alternatives are available.

5.1.6 Where an encasement is used and designed as a pressure vessel, the encasement pipe will have strength equal to or exceeding the carrier pipe. Where the casing is

not a pressure vessel, the casing pipe shall be capable of supporting a minimum external load of 2200 PSF at 30 in minimum depth and other requirements found in this manual or those of a railroad operating a rail corridor if more stringent.

Gas and liquid petroleum pipelines shall be designed and constructed to conform with 49 CFR, Part 192, Transportation of Natural Gas by Pipeline or Part 195, Transportation of Liquids by Pipeline, as applicable and hereby incorporated by reference. The maximum allowable operating pressure of gas mains must be shown on permit applications.

5.1.7 When an emergency condition warrants immediate action, the UAO should proceed immediately with repairs necessary to safeguard the public.

The Local Maintenance Engineer or designee shall be notified as soon as practical, but no later than the next scheduled working day. All repair work to the FDOT'S facilities must be approved by the Local Maintenance Engineer. If the type of work would normally require a permit, the UAO(s) will be required to submit a permit application within 1 week after the work is completed. In a situation of this type, a TCP is not required with the permit application. This does not eliminate the responsibility to provide a safe MOT setup, when and where practical. In any case, restoration of rights-of-way will be in accordance with all applicable Department specifications and standards, at the expense of the Permittee.

5.1.8 All underground service connections shall comply with the rights-of-way restoration and minimum depth (except to meet aboveground termination) requirements found in this manual.

5.2 Crossings

5.2.1 Crossings under existing pavement will usually be made without cutting the pavement. Underground crossings made by methods other than open cutting shall conform to the provisions of Sections 10.13 through 10.17. The proposed means of placing the pipe shall be stated on the permit. Conditions which are generally unsuitable or undesirable for pipeline crossings should be avoided.

Clearance requirements for both aerial and underground crossings are shown in location criteria.

5.3 Limited Access Crossings

All longitudinal installations on limited access rights-of-ways shall be in accordance with FDOT's "Policy on Accommodation of New Utilities on Limited Access Rights-of-Way." Exceptions to the "Policy on Accommodation of New Utilities on Limited Access Rights-of-Ways" must be approved by the State Highway Engineer or designee. In expanding areas along a limited access facility, the Permittee will install distribution lines, spaced as needed, to serve consumers in a general area along either or both sides of such facility; so as to minimize the need for crossings of such facility by utility service connections. In areas where utility services are not available within reasonable distance along the side of the limited access facility where the utility service is needed, crossings by utility service connections will be permitted pursuant to Chapter 12 of this Manual. The construction and maintenance of Utilities should be accomplished without violation of limited access principles. This will normally require the following:

5.3.1 Underground pipelines crossing between interchanges should be encased between toe of slopes. Casing pipe for flammable gases and fluids will be vented at the rights-of-way line. Welded steel pipe transmitting gas or liquid petroleum may be installed without encasement, provided such pipelines conform with 49 CFR, Part 192, Transportation of Natural Gas by Pipeline or Part 195, Transportation of Liquids by Pipeline, as applicable. The pipeline shall be designed to withstand internal design pressures and the superimposed loads of the transportation facility. All construction and maintenance will be outside the limited access fence. When utilities are placed on completed sections, the limited access fence may be replaced with temporary fencing extending into the toe of slope and enclosing the entire work area.

5.3.2 Underground crossings in interchanges, where access to the utility may be gained without violation of limited access principles, shall be installed with sufficient strength to preserve the structural integrity of the paving and structure.

5.3.3 All piping must comply with the appropriate Federal and State regulations in effect at the time of permitted construction.

5.3.4 Since aerial crossings usually may not be accomplished without work inside the limited access facility, such crossings between interchanges should be minimized. Where necessary to construct a crossing between interchanges on an operational facility, a comprehensive plan for this work must be presented as part of the permit application.

No temporary supports will be permitted within the applicable clear zone or horizontal clearance of the roadway, unless placed behind existing guardrail at or

exceeding the minimum offset or incorporated within an approved barrier system.

No work of any type, in connection with permitted construction will commence without 48 hours prior notification to the Local FDOT Maintenance or Resident Engineer's Office.

5.3.5 Where a permitted facility exists within the proposed rights-of-way of a limited access facility and it can be serviced, maintained and operated without interference to traffic on through traffic roadways or ramps, it may remain as long as it does not adversely affect the safety, design, construction, operation, maintenance or stability of such limited access facility. See Chapter 12 of this Manual for Limited Access Rights Of Way provisions.

5.3.6 Expansion of a utility carried by an existing structure across a major valley or river may be permitted, provided the utility can be installed and serviced without interference to the motoring public.

5.3.7 Where a utility follows a crossroad or street which is carried over or under a limited access facility, provisions should be made for the utility to cross the limited access facility at the location of the crossroads or streets in such manner that the utility can be serviced without interference to traffic on through-traffic roadways or ramps. Where distinct advantage and appreciable cost saving is affected by locating the utilities outside the rights-of-way of the crossroad or street they may be so located.

5.3.8 Except for necessary crossings, water canals and irrigation ditches should be excluded from the limited access rights-of-way. Crossings may be made by underground siphon, or through culverts, or bridges as appropriate to the size of canal, topographic conditions, and transportation safety aspects. In general, locations and structures are to be designed in the same manner as are facilities for natural transverse drainage. All ingress and egress for servicing or patrolling such facilities shall be from outside the control of access lines.

5.3.9 When existing utilities are relocated or adjusted in conjunction with construction of a limited access facility, provisions may be made for known and planned expansion of the utility facilities, particularly those underground. They should be planned to avoid interference with traffic at some future date when additional or new overhead or underground lines are installed.

5.3.10 Access for servicing a utility along or across a limited access facility should be limited to access via:

(A) Frontage roads where provided.

(B) Nearby or adjacent public roads and streets.

(C) Trails along or near the FDOT limited access rights-of-way lines, connecting only to an intersecting roadway or rail corridor, from any one or all of which entry may be made to the outer portion of the limited access rights-of-way.

5.4 Attachments to Structures

5.4.1 General - Generally if any of the following conditions are created by the attachment to a structure, the attachment will not be approved:

(A) An obvious hazard to the Public.

(B) The integrity of the structure will be affected.

(C) Inspection and Maintenance Operations will be unreasonably hindered.

(D) Aesthetics of structures which are located in aesthetically sensitive environments will be adversely affected.

Details of utility attachments including loads, attachment positions, detail dimensions, material type, plans, specifications and corrosion certification forms will be submitted by a Professional Structural Engineer registered in the State of Florida. These plans and specifications shall be signed and sealed by the Engineer, and the information shall be suitable for inclusion in the Florida Bridge Management Inventory System (BMIS) file. Development of construction plans for the accommodation of utilities onto structures to be constructed shall be the responsibility of the Permittee.

Permits for attachments to existing structures shall be reviewed and recommended for approval or denial, by the District Structures and Facilities Engineer and approved by the District Maintenance Engineer or their designee.

Comments from the District Structures and Facilities Engineer must be coordinated into the design process. The Permittee shall coordinate the plan development process with the District Maintenance Engineer or his designee.

5.4.2 Responsibility - The UAO is totally responsible for the design, safety, inspection and maintenance of its facilities and supporting hardware attached to FDOT bridge structures. If the FDOT determines that the utility may be accommodated, the Permittee's Engineer has the responsibility to determine that the structure will support the utility in addition to other loads in a safe manner and will not significantly reduce the live load capacity of the bridge. The FDOT is the final authority in all

disputes that may develop. The UAO is advised to review the Five Year Work Program to determine if an existing bridge will be replaced, rehabilitated or widened.

5.4.3 Criteria - Where attachments are permitted, the following criteria must be met as conditions of issuing the permit:

5.4.3.1 Designs for utility attachments shall be in compliance with all applicable Federal, State and Local Regulations, Rules, and Codes.

5.4.3.2 No construction or maintenance will be accomplished upon a structure without written approval from the District Maintenance Engineer or designee. In emergencies, repairs may proceed after verbal approval from the District Maintenance Engineer or designee.

5.4.3.3 Utilities attached to bridge structures shall maintain a vertical clearance at least equal to that of the structure.

5.4.3.4 Attachments onto bridge structures, whose locations are environmentally classified as extremely aggressive, shall have all the metallic portions of the attachment hardware (hangers, bolts, etc.) fabricated from 316 stainless steel or other equal material as determined by the State Corrosion Engineer.

A determination as to whether or not a bridge structure is located in an extremely aggressive area can be acquired from the District Materials Engineer.

5.4.3.5 Utility cables or conductors shall be encased in conduit so that maintenance can be accomplished from the ends of the structure. Conduits for utilities to be installed on bridges located in extremely aggressive areas shall be fabricated from non-metallic materials or other equal materials as determined by the State Corrosion Engineer.

5.4.3.6 All electrical cables 2 kv and above shall be shielded cable with a concentric neutral grounded at both ends of the bridge.

5.4.3.7 Metallic pipes or conduits shall be electrically insulated from the structure by redundant insulators. Metallic pipes or conduits shall be supported by insulating pipe rollers or specifically designed sliding or elastomeric bearings. Insulating pipe rollers (rollers constructed from dielectric material) shall be used, unless the loads will permanently strain the roller material beyond the elastic limit.

5.4.3.8 All utilities shall be isolated and insulated from the structure to ensure that corrosion cells do not develop because of the attachment of the utility.

5.4.3.9 Utility attachments should be designed to pass through the back wall of the

abutment, when practical. Pipe may be routed around the abutment when the abutment back wall design prohibits pass through due to dimensional constraints, thickness, material composition or reinforcement. The Permittee will consult with the District Maintenance Engineer or designee and the District Structures and Facilities Engineer concerning the FDOT'S requirements at each site.

5.4.3.10 All pressure lines shall have shut-off systems so that the pipe segment at the bridge can be isolated.

5.4.3.11 All lines carrying hazardous material (flammable, toxic or corrosive) shall be designed to be in compliance with the U.S. Department of Transportation Pipeline Safety Standards 49 CFR, Part 192 or Part 195, as applicable, for a class four location. Only steel pipe with welded or flange joints and conforming to API Standards shall be used.

Accommodation of pipes transmitting hazardous materials with line pressures in excess of 250 psi gage pressure should be reviewed in light of the added safety concerns.

5.4.4 Location - Utilities should be located underneath the cantilever portion of the bridge structure deck overhang. Under no circumstances should any Utility be allowed to attach onto the bridge girders. Locating the utility under the deck overhang is the best location because it minimizes interference with bridge inspection and future girder maintenance.

5.4.5 Materials - All materials to be used for utility conduit, pipe coatings and concrete repairs shall be approved by the FDOT'S Materials Office in Gainesville, Florida. The process used for approval of materials for placement on the Qualified Products List (QPL) is described in FDOT Topic No. 630-020-001-a, “TRANSPORTATION PRODUCT EVALUATION,” and is hereby incorporated by reference. As materials are approved, they will be placed on the QPL. Selection of material type is governed by project location. Conduits shall be supported so that long term deflection between supports, when fully loaded, shall not exceed 5/8 in. Examples of approved conduits for utility cables or conductors for outdoor exposure locations are stated as follows:

5.4.5.1 All utility supporting hardware shall be constructed of the same metal material. No combinations of dissimilar materials will be allowed (threaded inserts included), unless the materials are separated by flange bushings constructed from non-conductive materials. Supporting hardware is defined to mean any and all threaded inserts, bolts, nuts, washers, hangers, or brackets. Approved materials for supporting hardware are as follows:

Alloy 6061 T6 Aluminum;
316 Stainless steel;
Hot dipped galvanized steel in accordance with 1995 ASTM Specifications, Structural Shapes A-123 - 89;
1995 ASTM Specifications Hardware A-153 - 82;
1995 ASTM Specifications Bolts A-307 - 90,
or other equal materials as determined by the State Corrosion Engineer.

5.4.5.2 All support metal devices, except stainless steel, shall have a minimum thickness of 3/16 in. The use of threaded inserts cast into the concrete or retrofitting with adhesive anchors are required to attach the utility to the bridge deck. The use of expansion anchors is prohibited.

5.4.6 Sections 5.4.6.1 through 5.4.6.4 should be used for coating potable water mains attached to bridges and bridge appendages. Sections 5.4.6.1 through 5.4.6.3 of the following coating system should be used for gas, sewer or other ferrous piping systems attached to bridges and bridge appendages.

5.4.6.1 Surface Preparation - Shall be according to the Steel Structures Painting Council Surface Preparation Specification SSPC-SP 10 for the removal of oil, grease, dirt, mill scale, rust and corrosion products, oxides paint and other foreign matter except for slight streaks or discolorations. This specification is defined as a near white metal blast cleaning with silica sand (1.0 to 3.0 mil anchor pattern) where at least 95 percent of the surface area shall be free of all visible residues.

5.4.6.2 Exterior Metal Surfaces (excluding pipe flange face)

Primer Coat - 3.0 mils to 5.0 mils (dry mils) of a two package self curing ethyl silicate inorganic zinc rich primer (80% to 85% metallic zinc in cured dry film).

Intermediate Coat - 4.0 mils to 6.0 mils (dry mils) of catalyzed polyamide epoxy (white).

Topcoat - 2.0 mils to 4.0 mils (dry mils) of catalyzed aliphatic polyurethane (gray color matching color no. 36622 of the Federal Standard No. 595b). Color banding should be used at the abutments and at 150 ft spacing along pressure pipe. This band should conform with OSHA color codes according to the material being transmitted. The color band should be 6 in wide.

5.4.6.3 Pipe Flange Face

Primer Coat - 3.0 mils to 5.0 mils (dry mils) of a two package self curing ethyl silicate inorganic zinc rich primer (80% to 85% metallic zinc in cured dry film). No

intermediate coat or topcoat would be applied to the pipe flange face.

5.4.6.4 Interior Metal Surfaces - Interior metal surfaces must be lined with cement or other linings. An alternate to lining the pipe would be to coat the surfaces as described below.

Primer Coat - 5.0 mils to 8.0 mils (dry mils) of potable water approved catalyzed high build epoxy (gray).

Topcoat - 5.0 mils to 8.0 mils (dry mils) of potable water approved catalyzed high build epoxy (white).

5.4.6.5 All coating products used are subject to the approval of the FDOT State Materials Office, 2006 N.E. Waldo Road, Gainesville, FL, 32609.
Phone: (352) 337-3100

5.4.7 Corrosion Mitigation - All attachments to bridge structures shall be designed to minimize any danger of corrosion activity by stray current flow into the structure from the utility. The utility shall be encased in a conduit constructed of nonconductive material or shall be separated from the supporting hardware by an insulating roller or other nonconductive material. All bolts entering the bridge structure should be separated from supporting brackets by the use of flange insulating bushings or redundancy accomplished by other means.

Metallic utility pipes shall be supported on insulating rollers or other nonconductive material.

All gas lines or other cathodically protected lines shall be equipped with both insulating joints and electrical test leads at both ends of the bridge.

In order to assist the Designer with the proper corrosion mitigation design, the following general concepts are provided for integrating into the design:

(A) Provide a dielectric barrier between the utility and bridge structure which will insulate them electrically. This can be accomplished by using a non-metallic material for mounting hardware, supporting the pipe on an insulating pipe roll, encasing the utility in non-metallic pipe or providing a coating or wrapping such as neoprene between the utility and the mounting hardware. Additional precautions shall be taken by avoiding contact between metal components in the bridge and metal inserts and anchor bolts.

Where pipe or utility is mounted on saddles and guides to allow for movement, additional provisions should be made to compensate for wear.

All contact between dissimilar metals should be avoided.

(B) The installation of insulating joints in the utility on each end of the bridge structure will help reduce the possibility of corrosion interference. Electrical test leads installed on each side of an insulated joint will provide the necessary means for periodic testing.

(C) One utility shall not have electrical continuity with another in any of the sections attached to the bridge. Individual isolation will allow for correction of future problems which might occur and will expedite periodic maintenance checks and tests.

(D) Where the utility passes through any part of the concrete bridge structure into the soil or water, provisions shall be made to separate the contact area. This can be accomplished by installing a non-metallic sleeve through the concrete or by wrapping the utility with a mastic or neoprene material. Consideration should be given to separating the utility and concrete in buried thrust blocks.

(E) Selection of the proper materials is extremely important. Corrosion resistant material, such as stainless steel or galvanizing for mounting hardware is necessary. It is the responsibility of each utility to install and maintain its facilities and not create undue maintenance problems for other utilities or the bridge structure. Such conditions as rust streaks, discoloration and deterioration can be eliminated through proper material selection.

5.4.8 Thermal Expansion - Methods to compensate for thermal expansion, expansion joints or expansion loops, shall be designed for all bridge structure utility attachments except those utility attachments onto structures with an overall length of less than 35 ft. The utility attachment shall transmit no longitudinal or thrust loads to the structure at the abutment. Loads caused by thermal expansion and transmitted to the bridge structure shall be minimized. The expansion method shall be engineered, detailed, and located on the plans when submitted for approval. Adequate supports shall be provided near expansion joints, equally spaced each side of and near to the joint, to assure proper alignment of the joint.

Expansion joint details shall indicate joint opening setting which compensates for temperature at the time of installation. Utility pipes transporting fluids and using mechanical joints shall be equipped with joint restraints. Use of pipe couplings, other than expansion couplings (expansion joints), shall be avoided on bridge structures. If pipe couplings are used, restraint shall be provided to prevent pipe movement at the coupling, and the pipe system shall be designed to restrict all movement to expansion couplings.

5.5 Other Systems

5.5.1 Casings - When casings are used for crossings of flammable gases or fluids, the casing shall extend to the toe of the front slope and shall be vented at or outside of the rights-of-way line. Welded steel pipelines transmitting gas or liquid petroleum may be installed without encasement provided such pipeline conforms with 49 CFR, Part 192, Transportation of Natural Gas by Pipeline, or Part 195, Transportation of Liquids by Pipeline, as applicable. The pipeline shall be designed to withstand internal design pressures and the superimposed loads of the transportation facility.

Casing shall be required for crossings of underground utilities where the carrier conduit is of insufficient strength due to composition or depth of cover.

Casing shall be required for crossings under existing pavement where the carrier is of composition such that it cannot be jacked and bored.

5.5.2 Temporary Supports - Where it is necessary to place temporary supports for aerial crossings which will interfere with traffic, careful planning of work with regard to the safety of vehicular traffic is mandatory.

No temporary supports will be allowed closer than the minimum clearance as shown in the UAM or as required by the operating railroad, unless incorporated with approved barrier systems or other approved work zone traffic control devices.

No work of this type will commence without 48 hours notification to the local law enforcement agency and Local Maintenance Engineer, within whose jurisdictions such roadway is located prior to commencing work. Such temporary construction shall be completed in the minimum amount of time practical, as approved in the permit.

5.5.3 Where the applicant wishes to connect any surface (storm water) or subsurface drainage to the FDOT drainage system, the applicant shall apply for a permit to allow this connection using the procedures contained in Rule 14-86, FAC. This rule contains both water quality and rate requirements.

5.6 Pavement Cutting / Trenching of a Transportation Facility

5.6.1 In any analysis of a request for open cutting or trenching, primary considerations will be given to the safety and convenience of the public. The applicant shall provide written justification for approval of open cutting.

5.6.2 Open cutting of existing pavement and side roads, less than 5 years old, on FDOT rights-of-way generally will only be considered with written justification to include an

analysis of factors demonstrating that means other than open cutting would not be feasible. The factors shall include but not be limited to conditions such as: pavement re-construction is scheduled for the facility within the Five Year Work Program, subsurface obstructions, limited space for jacking and boring/directional boring, high water table, or substandard roadway surface.

5.6.3 Open cutting of existing paved driveway connections will be permitted, provided the users are notified by the Permittee 7 days in advance, access to the property is maintained for the users, and pavement is restored to the greater of an equivalent condition and type to what exists or in accordance with this Manual. Notification may be accomplished by the use of a door hanger type notice, or on-site signs, as appropriate and approved by the FDOT.

5.6.4 Where open cutting has been permitted, replacement of fill, base and surface will be in accordance with this Manual, the FDOT Standard $Index_2$ No. 307, and any special provisions of the permit.

Chapter 6

SPECIAL REQUIREMENTS FOR INSTALLATION, RESTORATION OF RIGHTS-OF-WAY AND MAINTENANCE OF A UTILITY

6.1 General

All FDOT rights-of-ways shall be restored, at a minimum, to the condition which existed prior to any utility work, in accordance with the FDOT Standard Specifications for Road and Bridge Construction. Erosion and sediment controls, if required, shall be installed before any work begins, and in accordance with Local, State, and Federal requirements. If the Permittee fails to restore the rights-of-way to the condition which existed prior to any utility work, the FDOT, after providing notice and an opportunity for the Permittee to restore the facility, will repair the rights-of-way and submit an affidavit of cost to the Permittee for reimbursement or to the State's Attorney Office for collection.

6.1.1 Chapter 556, Florida Statutes, requires the Permittee, prior to any excavation or demolition activities, to notify the One-Call System. (Also called Sunshine State One-Call). This is to be done not less than 2, nor more than 5, business days before beginning. The phone number for Sunshine State One-Call, Inc. is 1-800-432-4770.

6.1.2 The Permittee should be aware that the Utility work may require compliance with other State and Local Agency codes, standards/criteria including the NPDES and DEP Drinking Water Permitting Process.

6.1.3 All affected side drains, side ditches and storm sewers will be identified and referenced as to grade and location prior to construction. Anticipated conflict manholes shall be noted in the Utility Relocation Schedule and reflected in the State DEP Drinking Water Permit for domestic water supply facilities. Conflict manholes constructed to accommodate domestic water supply facilities in the field, but not noted in the drinking water permit, requires after the fact phone notification to the DEP Area Drinking Water Manager and a written notification within 1 week.

6.1.4 At each open cut, the backfill material shall be placed and compacted per the FDOT Standard Specifications for Road and Bridge Construction$_3$, Section 125-8, and Special Provisions for Flow-able Fill. This requirement holds for embankment, subgrade and base. The density determinations can be made by the Permittee, if qualified, or a certified laboratory under the supervision of the Permittee's

consultant. A copy of all density test reports shall be furnished to the FDOT.

6.1.5 When open cut is allowed, drawings must accompany the permit application showing proper replacement of the roadway and location of the utility. Written documentation is required showing why the utility believes a deviation from the FDOT's standards is justified.

6.1.6 Temporary patches will be maintained to provide a smooth, all weather surface at all times. Temporary patches shall be replaced by permanent patches as soon as all other installation work is completed, and the Local Maintenance Engineer or designee will be notified 48 hours prior to application of the permanent patch. The Permittee will be required to maintain the permanent patch for a period of 2 years from the date of installation.

6.1.7 Shoring will be required to conform with the provisions of Part VI of Chapter 553.60, F.S., the “Trench Safety Act”, to protect existing pavement, structures, and foundations.

6.1.8 Excavated material in excess of the quantity required for backfill in FDOT's rights-of-way shall be removed by the Permittee.

6.1.9 All correspondence regarding construction procedures will be handled directly with the Permittee and not through the Permittee's consultants, contractors or subcontractors.

6.1.10 At such locations where FDOT signs, reflectors, or other structures will interfere with proposed utility installation, the Permittee will notify the Local Maintenance or Resident Engineer 48 hours in advance of starting work. All signs and reflectors that require relocation or replacement as a result of Permittee's work will be relocated or replaced by the Permittee.

6.1.11 All trees and shrubbery (planted or naturally occurring on the rights-of-way) irreparably damaged or destroyed by the UAO during construction shall be replaced by and at the Permittee’s expense with like-sized plants, except for trees or shrubs removed in accordance with the permit for purposes of complying with clear zone or horizontal clearance. Replacement plant size shall be determined by calculating the total diameter at breast height (DBH) of affected trees and/or shrubbery, or the total averaged height of affected trees and/or shrubs. When existing trees or shrubs have a clear trunk up to the DBH (measured 4 & ½ feet above grade), the DBH Method shall be used to measure existing trees or shrubs. If the trunk has vegetation and does not have a clear area below the DBH, the total averaged height method shall be used. Utility companies must measure trees and shrubs before they

are cut down to determine DBH. Replacement material is measured in the nursery industry measurement standard of Caliper inches which is measured 6" above grade of nursery stock. The Maintenance Engineer, Resident Engineer, or Landscape Manager shall direct which replacement method is appropriate if the trees or shrubs have been cut down and the ability to measure the DBH is impractical.

The Department will take all reasonable measures to determine if an existing departmentally approved landscape project exists where the UAO intends to conduct construction. If such landscaping does exist, the UAO shall notify the landscape Permittee (typically the local government). The UAO shall, at that time, inform the landscape Permittee and Maintenance Engineer, Resident Engineer, or Landscape Manager of the scope of work to be performed, so that a determination can be made on how much of the existing landscape may be affected by such work.

6.1.12 Sodding, grassing and mulching operations shall begin within one (1) week after utility is installed, except in cases of front and back slopes which shall be done immediately. All grassing and mulching will be in accordance with the FDOT Standard Specifications for Road and Bridge Construction$_3$. Any FDOT rights-of-way that has a grass mat will be re-sodded with like sod. The Permittee shall maintain that portion of the rights-of-way affected by the permit installation until vegetation is established.

6.1.13 The Permittee shall immediately cease operations and notify the Local Maintenance Engineer or, if on a construction project, the Project Engineer, if substances or material suspected of being hazardous waste, asbestos, oil of any kind or in any form, gasoline, pesticides, ammonia, chlorine, and derivatives thereof, excluding liquefied petroleum gas, are discovered in the portion of the rights-of-way where work is authorized by the permit. The FDOT shall notify the Permittee of the suspension or revocation of the permit until contamination assessment and remediation under Rule Chapter 62-770 and 62-730 FAC., has progressed to a state that all environmental regulatory agencies having jurisdiction have approved the site of the contamination for resumption of construction and utility work. See Rule Chapter 62-770 and 62-730 for further details.

At that time, the FDOT will notify the Permittee and provide an opportunity for the Permittee to obtain an amended permit, subject to any conditions imposed by said environmental regulatory agencies. The Permittee shall comply with all conditions of the amended permit.

If the discovery is made on an FDOT construction project, the time for the permit will be suspended and shall not resume until such time as the Resident/Project Engineer informs the Permittee.

Chapter 7

MAINTENANCE OF VEGETATION

7.1 General

Maintenance of vegetation includes any method or technique intended to alter or regulate the normal growth process of plants. Techniques of manual or mechanical methods or the use of herbicides or plant (tree) growth regulators may be allowed based upon site specific safety requirements.

Safety, aesthetics and the preservation of desired vegetation are prime considerations in the maintenance of vegetation. Vegetation maintenance will not detract from the natural beauty of the roadside and shall not provide or appear as an abrupt change in roadside vegetation conditions to the greatest extent practical. Except for tree trimming in Section 7.2, the removal, cutting or destruction of any vegetation within FDOT'S rights-of-way is prohibited unless authorized by FDOT for invasive, undesirable, or exotic species. A 48 hour minimum notice shall be given to the respective Local Maintenance Engineer prior to the performance of operations.

7.2 Tree Trimming

Under Section 337.405, Florida Statutes, the trimming of trees where required to ensure and maintain the safe operation of utility facilities is allowed by the original permit, provided such trimming is performed in accordance with recognized and approved principles of modern vegetation control methods, with emphasis on tree health. Such trimming shall not unnecessarily damage trees and shrubs that are intended to remain in the work area. The use of mechanical tree trimming machines will be permitted as part of routine maintenance. All waste and debris associated with the trimming shall be removed from FDOT rights-of-way, unless otherwise approved in writing where the Department has arranged for removal by other forces. When trimming does irreparable damage to trees or shrubs or causes the vegetation to die, the Permittee shall replace this vegetation with material as described in Section 6.1.11 of this manual.

7.3 Removal of Vegetation

Manual or mechanical cutting of vegetation will be permitted on a routine or periodic basis, provided that the limits of work do not extend beyond the limits necessary for the proper maintenance of the utility facility. Grasses shall be mowed or cut at a minimum height of not less than 6 inches and in such a manner as to promote low

growing ground cover species. Mowing equipment shall be so equipped and operated in a manner to preclude the throwing of debris that would create a safety hazard.

In areas dominant in brush, the UAO may remove or cut flush with the ground those trees (less than 4 inches in diameter or larger, with the approval of the District Maintenance Engineer) interfering or likely to interfere with the safe maintenance and operation of utility. All undergrowth is to remain natural. Brush cuttings or debris discharged into the routine maintained limits of the rights-of-way shall be removed by UAO. Stockpiling of debris for later disposal is allowed outside the mowing limits and clear recovery zone. The distribution of chips outside the mowing limits and clear recovery zone, or beneath existing trees at a uniform thickness will also be allowed with the prior approval of the Maintenance Engineer.

7.4 Chemical Control of Vegetation

Authorization to control vegetation chemically must be secured in advance, in writing, with 48 hour minimum notice given to the respective local Maintenance Engineer prior to the application of the chemicals. All requests shall be submitted in a written proposal that outlines the extent of the intended work, the type of herbicides or plant (tree) growth regulators, including labels and material safety data sheets that are intended for use, and the intended timing and techniques of application. The Resident Maintenance Office must also be furnished documentation that the permittee's herbicide applicator, whether a utility staff person or contractor, is certified to apply herbicides as part of the permit request.

The use of herbicides and plant (tree) growth regulators for the purpose of chemically maintaining vegetation may be approved by the Local Maintenance Engineer on a site or location specific basis. Application for chemical control will be considered on an individual basis and authorization shall not be interpreted as giving permission to extend beyond the specified limits or the provisions of the work.

Regardless of the method used by the Permittee for control of vegetation, liability for damage to adjacent property and the FDOT'S rights-of-way rests solely and entirely with the Permittee. The Utility must comply with all applicable Federal and State regulations.

No application will be permitted on vegetation greater than 6 ft in height that will create an undesirable appearance or undesired browning or color change of vegetation. Special height considerations may be given to locations where physical manmade obstructions preclude or prevent the reducing of vegetation to the 6 ft height. Applications at a height of greater than 6 ft may be authorized by the Maintenance Engineer in areas with rapid plant growth or in the control of invasive

exotic vegetation providing the dead plant material is removed, chipped or mulched following successful performance of the herbicides. Vegetation that is to be maintained chemically shall be treated while in the first growing season after mowing or before it has reached a height of 6 ft.

The Permittee or its contractor shall not use any herbicide that is labeled as restricted use or contains the active ingredient sulfonyl urea or any sulfonyl urea family of chemicals.

Neither the Permittee nor its contractor shall apply non-selective or residual herbicides to roadside turf grasses or apply any chemical of any type or rate that causes permanent injury to desirable vegetation or that may result in bare ground. Exceptions will be authorized by the District Maintenance Engineer when the treatment of invasive exotic vegetation is of more importance than preservation of desirable plants.

Individual stem and solid stream treatments that result in spot or narrow band control is permitted pursuant to state law and regulations. For examples of when other agency regulations or laws may apply, see the following:

- Rule 5E-2.002 Florida Administrative Code
- Chapter 487, Florida Statutes

Where specific plants have been selected and preserved, they shall be protected against damage by the herbicide treatment of adjacent vegetation. Careless or excess applications will not be tolerated. Special precautions must be taken with all herbicide applications to ensure that they are made in accordance with all environmental considerations and associated regulations.

Personnel shall be trained, experienced, and competent in the particular type of work they are engaged in and licensed according to applicable Federal and State law. Only experienced personnel having a thorough understanding of herbicide application and the technical complexities in this field of expertise are to be allowed to apply these chemicals.

A complete copy of the records detailing the dates, location, materials, rates, weather and other relevant data, as required by Federal and State law, shall be maintained by the Permittee and provided to the FDOT upon request.

Misuse or unsatisfactory performance results or failure to comply with these provisions will be sufficient cause for the denial of future use of chemicals for vegetation control.

Chapter 8

MAINTENANCE OF TRAFFIC (MOT)

8.1 Background

Whenever work is done on or near the roadway, drivers are faced with changing and unexpected traffic conditions. These changes may be hazardous for drivers, workers, and pedestrians unless strict protective measures are taken.

Since drivers do not make a distinction between construction, maintenance or utility operations, proper traffic control and safety are needed for all types of work.

Part VI of the Manual on Uniform Traffic Control Devices$_4$ (MUTCD) is the national minimum standard for all traffic control devices and methods used during construction, maintenance and utility activities.

The State of Florida adopted the MUTCD as the minimum State Standard for use on roadways other than the State Highway System such as city and county roadways.

The State of Florida adopted higher standards for some devices and conditions to be applied on the State Highway System managed by the FDOT. In addition to the MUTCD$_4$, the Standard Specifications for Road and Bridge Construction$_3$ and the "FDOT ROADWAY AND TRAFFIC DESIGN STANDARDS$_2$ FOR DESIGN, CONSTRUCTION, MAINTENANCE AND UTILITY OPERATIONS ON THE STATE HIGHWAY SYSTEM" (Index 600, pages 1-11) shall be used on FDOT rights-of-way. Index 600, pages 1 through 11, provides Department Policy and Standards. Changes are only to be made through Department approved procedures. Indexes 601 through 660 provide typical application for various situations. Modifications can be made to these Indexes as long as the changes comply with the MUTCD and Department Standards.

8.2 Traffic Control Plan (TCP)

When a permit for utility installation, adjustment or maintenance activity is required, a proposed TCP shall be submitted with the permit application for approval.

TCP should be designed and submitted based on actual field conditions. However, when site conditions change significantly and warrant a change to the approved TCP that was submitted with the permit application, the Permittee is required to notify the FDOT. A new TCP which reflects actual conditions shall be designed in accordance with the standards set forth in the MUTCD$_4$, the FDOT Roadway and Traffic Design

Standards$_2$ and Standard Specifications for Road and Bridge Construction$_3$.

Almost all maintenance of traffic can be accomplished using the typical applications in Indexes 601 through 660. Some set-ups may require combining indexes or being adjusted to meet field conditions. These are not engineering decisions and therefore do not require signing and sealing. However, if the standards must be significantly compromised an alternate TCP is required and must be prepared, signed and sealed by a qualified, registered Florida Professional Engineer.

All revisions / changes to standards contained on Standard Index 600, pages 1 through 11, that are submitted as part of a TCP require FDOT approval and may require the signature of a qualified registered Florida Professional Engineer. This Standard Index contains criteria adopted specific to the State Highway System and may be different from what is contained in the MUTCD. For example, Index 600 includes but is not limited to: signing size, specific signing language and reflectivity requirements; increased width, length, height and reflectivity requirements for barricades and cones; pavement drop off requirements, etc.

Standard Indexes 601 through 660 were developed with the intent of applying MUTCD guidelines for setting up traffic control devices for many common construction and maintenance scenarios while maintaining the specific criteria contained on Standard Index 600, pages 1 through 11. Actual field conditions or Utility work scenarios may not be identical to those represented in Standard Indexes 601 through 660. The Utility may combine one or more, or use a portion of these specific Standard Indexes as appropriate without the requirement to have a qualified registered Florida Professional Engineer's signature. This is allowed as long as the safety provisions of the MUTCD are maintained and the standard indexes are not taken out of context. This allows for job specific <u>set up</u> revisions based on site conditions. This <u>does</u> <u>not</u> allow changes to devices or items specific to Standard Index 600.

If the Utility elects to use portions of the FDOT's Standard Indexes as their TCP, the permit must include specific reference to the appropriate indexes and sections to be used.

For a TCP, Utility Companies may use drawings in their own manuals and procedures which reflect the conditions and criteria in the Standard Indexes, provided they include a statement such as "in accordance with FDOT Standard Index(es) _____." These drawings do not require signing and sealing.

8.3 Training and Job Control

The Permittee is responsible for insuring that each employee supervising the selection and placement of MOT Control Devices in Utility Work Zones shall be properly trained by attending and successfully completing an FDOT approved MOT

training course or the Permittee's approved MOT course.

The Permittee shall have a properly trained employee for the applicable level of MOT at the work site during the initial set-up and when any changes to the TCP are required. The Permittee's employee shall be available at the work site within 45 minutes of the Permittee being notified by the FDOT that problems exist.

When changes are made to the $MUTCD_4$, FDOT Roadway and Traffic Design $Standards_2$ or the FDOT Standard Specification for Road and Bridge $Construction_3$, the Permittee's approved training course, or any other courses approved by the FDOT shall be updated to reflect such changes.

Any person supervising performance of MOT activities on the State Highway System shall at all times have in their possession proof they are certified in MOT setup. A copy (facsimile or reduced) of their training certification will suffice.

8.4 Rail Flagging

All permitted utility work performed on an operating rail corridor shall comply with the flagging requirements of the operating railroad.

8.5 Non-Compliance

Upon notification by the FDOT of deficiencies in the TCP or other matters involving traffic safety, the Permittee shall immediately make improvements as directed by the FDOT. Should the FDOT deem conditions to be such that imminent danger is present, all work shall cease immediately and shall not resume until the conditions are corrected.

Chapter 9

LOCATION CRITERIA FOR UTILITIES ON NON-LIMITED ACCESS FACILITIES

9.1 Resurfacing, Restoration, & Rehabilitation (RRR) Construction Projects

9.1.1 General - Section 9.1 is to be applied only on RRR Construction Projects. Use the applicable standards in other sections for maintenance operations or construction projects other than RRR.

The following guidelines were developed in cooperation with the Utility Industry and apply to existing conditions. They recognize that no set of guidelines can realistically expect all existing utilities to be relocated to comply with new design criteria. RRR criteria may be used only on RRR Projects. Once the decision has been made to relocate on an RRR project, new construction criteria are encouraged when and where it can be accomplished in a cost effective manner considering all public and private interests.

Section 9.1 provides conditions and locations about which currently permitted utility facilities which do not comply with current standards may be allowed to remain in place. This does not eliminate the need for documenting or acquiring an exception where appropriate. They do not expand or allow poles to be located in areas previously prohibited, such as limited access, medians, gore areas, etc. This Section applies in curb and gutter and flush shoulder and to any above ground fixed object (utility, lighting, sign, or signal poles inclusive of controller cabinets) sufficient to cause serious damage upon impact by an errant vehicle.

The intent is to establish criterion for placement of above ground facilities but they may indirectly effect the location of underground facilities. For example, to achieve optimal above ground safety benefits, it may be necessary to place poles in an area which precludes the installation or requires relocation of an existing subsurface facility. The forced relocation of one above ground fixed object which causes the relocation of another facility will be done only when the benefit / cost analysis justifies the action to provide the public with appropriate safety benefits. The facility owner shall use whatever method practical to accomplish the safety objective.

9.1.2 Construction Project Facility Criteria: (RRR)- Existing above ground fixed objects which meet RRR criteria will be allowed to remain in place and no documentation is required.

Existing above ground fixed objects which do not meet RRR Criteria and have not

been hit more than 2 times in any 3 consecutive years of the last 5 years (FDOT crash history is the only documentation required to justify an exception), and are not in a Control Zone, will be allowed to remain in place.

Existing above ground fixed objects will be allowed to remain in place when the purchase of rights of way by the utility would be required or when the following conditions, a through d are simultaneously met:

(A) When the pavement or curb limits have not changed,

(B) When and where the utility facility will not interfere with other FDOT improvements,

(C) The utility facility is not located in a control zone or condition as defined in Section 9.2 and shown in Exhibit H,

(D) When any one or more of the following described conditions exist:

(1) When the benefit to cost ratio of relocation is less than 2,

(2) The above ground fixed object can not be moved sufficient to meet the required horizontal clearance without violating other FDOT criteria or utility codes,

(3) Relocating the above ground fixed object will not provide a minimum of 4 ft horizontal clearance,

(4) Relocation forces an above ground fixed object such as a utility or lighting pole to be located behind, into, or above existing trees having the growth potential to interrupt electrical service or be considered a high maintenance condition within the life of the improvements to the RRR project. Note for purposes of this criteria, trees are defined as exceeding 4 in or greater in diameter, 6 in above the ground and be located such that the intended utility service can not be provided. It is intended for this to be applied to a more or less continuous line of trees and not incidental tree locations. A few trees randomly located along a project does not justify failure to relocate. Local ordinances regarding tree trimming or removal will be considered in the evaluation of what can be done,

(5) Relocation forces the utility into areas without access or where room is not available for maintenance equipment to be operated (e.g., behind canals or roadside ditches with continual standing water).

(6) When insufficient usable rights of way exist.

9.1.2.1 Horizontal Clearance: (RRR) - For RRR projects, new construction horizontal clearance criteria set forth in Chapter 5 of this manual shall be used where practical when relocation of an above ground fixed object is required. On urban RRR projects 50 mph (posted speed) or less with curb or curb and gutter, the clearance may be reduced to 1.5 ft from the face of the curb or 6 ft from the edge of the traveled way to the nearest edge of the obstruction. When the minimum 1.5 ft from the face of the curb or 6 ft from the edge of the traveled way is met, no exception is required unless the above ground fixed object would be located in a control zone. See Section 9.2 on Control Zone limitations.

9.1.2.2 Clear Zone: (RRR) - Clear Zone requirements for RRR projects with flush shoulders are outlined in Table 9.1.2.2. Any above ground fixed object located within the clear zone should be removed, properly shielded allowing for barrier displacement or made crash worthy, or an exception obtained for noncompliance with FDOT criteria. Shielding or making an object crash worthy may still require an exception because these measures may also be considered hazards. Clear zone applies adjacent to traveled ways with flush shoulders. Clear zone as used by the FDOT does not apply when curb or curb and gutter is adjacent to the traveled way. Where curbing is present, horizontal clearance criteria is used to establish the minimum offset to an above ground fixed object. Clear zones must be adjusted for the effects of shoulder slopes and curves. Adjustments due to shoulder slope are the same as with new construction and are described in Figure 5.1.2.3 in Tables and Figures. Adjustments for curves are the same as with new construction and are found in Table 5.1.2.4.

9.1.2.2 Table - RRR Clear Zone (FEET) - Flush Shoulders

POSTED SPEED (mph)	TRAVEL LANES & MULTI-LANE RAMPS	AUXILIARY LANES & SINGLE LANE RAMPS
< 45	6	6
45* *	14	8
> 45	18	8

GENERAL NOTES:

1. **When relocation is required to meet minimum clear zone requirements, consideration should be given to providing new construction widths.**
2. **Clear zone widths are for side slopes 1:4 and flatter. For steeper slopes, provide a clear run out area per Figure 5.1.2.3.**
3. **When accident history indicates need, or where specific site investigation shows definitive accident potential, clear zone widths shall be adjusted on the outside of horizontal curves with flush shoulders in accordance with Table 5.1.2.4.**
4. **Clear zone width is measured from the edge of the traveled way.**

** **May be reduced to <45 mph widths if conditions more nearly approach those for low speed (40 mph or less).**

9.2 Control Zones or Conditions: (RRR)

Control zones are areas is which it can be statistically shown that accidents are more likely to involve departure from the roadway with greater frequency of contact with above ground fixed objects. These are described as follows and shown in Exhibit H.

(A) An above ground fixed object having been hit more than 2 times within 3 consecutive years in the last 5 years, unless it can be determined that the problem can be remedied through the project scope,

(B) Within the return radii of an intersecting street and the new construction horizontal clearance distance,

(C) For “T” intersections (on the non-intersection side) within the area defined by a line through the center of the return radii and return point of tangent extended across the street to the rights of way limits,

(D) For a distance of 100 ft measured downstream from the point of intersection of a right turn deceleration lane and where full lane width is achieved within the

new construction horizontal clearance distance (It is assumed the edge of pavement is not constructed on a reverse curve. If it is, the measurement would be taken from the point of intersection of the trailing curve),

(E) For a distance of 100 ft measured downstream from the point of intersection of a full lane termination with a skewed merge section within the new construction horizontal clearance distance (It is assumed the edge of pavement is not constructed on a reverse curve. If it is, the measurement would be taken from the point of intersection of the leading curve),

(F) For a distance of 3 ft from a driveway flare within the new construction horizontal clearance distance at the intersection of a dedicated intersecting service facility such as an alley way or easement,

(G) For a distance of 3 ft from a driveway flare within the new construction horizontal clearance distance at the entrance turnout for use other than a private residence.

(H) The area on the outside of a curve when the operating speed exceeds 35 mph (55kmh) or downstream of a kink in the alignment for a distance of 100 feet (30 meters). In each case the area falls within within the new construction horizontal clearance distance unless protected by a barrier. For curves, if the radius exceeds 3000 feet, no control zone exists and control zone requirements do not apply. For kinks in the alignment, if the kink is less than 5 degrees, no control zone exists specifically for the kink and therefore control zone requirements for kinks do not apply.

9.3 Transportation Facilities Other Than Limited Access or RRR.

9.3.1 Utility/Light Poles **-** All new utility/light pole installations shall comply with the UAM horizontal clearance and clear zone criteria. On Construction Projects where the Permittee cannot meet these requirements, the Designer shall determine what additional safety requirements are needed. If the pole placement is not related to a construction project, the requirement for compliance with the UAM horizontal clearance and clear zone criteria is still effective. (An exception may be requested from the District Design Engineer).

9.3.2 Parallel (Underground) **-** Parallel underground installations require a minimum vertical clearance 36 in below top of pavement and 30 in below existing unpaved ground, including ditch grade. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. In rural areas, installation normally will not be between edge of pavement and outer edge of slope. Installations will be as near the rights-of-way line as practical, taking into account existing overhead facilities and the desire to locate future pole facilities as far from the pavement as practical. Underground facilities should not be located in areas near the rights-of-way normally

used by pole facilities, when practical. Minimum depth requirement may vary if the utility is buried under the sidewalk or bike path and not adjoining the roadway facility. Utility placement shall accommodate future pavement widening. This normally would occur within 12 ft of the existing pavement. Installations must meet the minimum requirements of the NESC and CFR 49, part 192 which are incorporated by reference.

9.3.3 Crossing (Aerial) **-** Aerial crossings are permitted and will have a minimum of 18 ft vertical clearance over the roadway. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

9.3.4 Crossing (Underground) - Underground crossings require a minimum vertical clearance of 36 in below top of pavement and 30 in below unpaved ground line, including ditch grade. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance.

9.4 FDOT Railroad Corridors

There will be no new utilities located longitudinally on FDOT owned railroad corridors.

9.4.1 Operating Railroad Corridors **-** All utility location criteria shall be in accordance with the criteria set forth by the FDOT Standard Application Package for operating railroad corridor use and/or occupancy, which may be obtained from the District Rail Coordinator or the District Corridor Rail Manager, where one exists.

9.4.2 Non-Operating Railroad Corridors **-** All utility location criteria shall be in accordance with the applicable criteria set forth in this manual for the planned transportation facility use reflected in the applicable corridor management plan.

9.5 Airport/Airport Properties

All utility location criteria shall be in accordance with the criteria set forth by the airport jurisdiction, or as provided in Chapter 333, Florida Statutes.

9.6 Restrictive & Non-Restrictive R/W Area

These designations have resulted from the need to recognize that standard criteria cannot be reasonably applied where existing infrastructure makes it impractical, or not economically feasible to comply with all minimum horizontal clearance or clear zone requirements. Non-compliance will require obtaining an Exception from the FDOT or the facilities must be brought into compliance. The Exception must address the specific item/s in non-compliance and is only required for those areas in which

the FDOT has a planned project or there is an established crash history requiring resolution.

On RRR Projects with a curb or curb and gutter section, some areas along the project may not have sufficient border width to permit utilities to locate or relocate above ground fixed objects to the desired or minimum horizontal clearance or clear zone requirements. These areas are termed Restrictive R/W Areas. Examples of when this would apply are when insufficient rights-of-way exist, buildings exist with little or no set back from the rights-of-way, or the method of construction or design does not permit the base of the above ground fixed object to be located as desired.

In contrast, Non-Restrictive R/W Areas represent those areas along a project (regardless of project type or typical section) where sufficient border width does exist to permit utilities to locate above ground fixed objects in compliance with minimum horizontal clearance or clear zone requirements. In order to provide for the safest project conditions, Utilities are encouraged to establish their clear zone and horizontal clearance requirements during or prior to the FDOT project scoping in accordance with the Department's Five Year Work Program, available from the District Office.

Chapter 10

GENERAL REQUIREMENTS

10.1 Devices such as signal strain poles, fire hydrants (where practical), down guys, telephone load pedestals and other items whose construction and size would cause extensive damage to a vehicle if struck are to be located according to the standards for utility poles.

10.2 For the purpose of this Manual, frangible base poles will be accepted if in accordance with the Roadway and Traffic Design Standards$_2$.

10.3 On projects where the utility or other obstruction in conflict with the sidewalk, and in the case of utility poles would create a conflict with requirements of the National Electrical Safety Code, the minimum criteria may be found in Chapter 5 for new construction and Chapter 9 for RRR construction. The Permittee shall insure that a minimum 32 inch width is maintained on sidewalks per the "Florida Americans With Disabilities Accessibility Implementation Act", Florida Statute 553.501 through 553.513. In each case where a deviation is proposed, a design exception must be requested.

10.4 Where practical, excavation will not be allowed within 8 ft of the edge of the pavement.

10.5 Clearances for aboveground lines that are parallel to the rights-of-way will be 16 ft minimum except where side roads connect to the state transportation system, then 18 ft minimum shall be required.

10.6 This criteria shall not be applied to a minor segment of an existing utility installation in such manner as to result in misalignment of the installation or adjustment of the entire installation.

10.7 Manholes and valve boxes shall be outside the travel way and bike lanes, to the greatest extent practical. The manhole ring, cover and pad must support the traffic for the area where it is being constructed and shall be set flush with the finished grade.

10.8 **Out of Service or Deactivated Underground Utility Facilities**

Out of service or deactivated underground utility facilities will be allowed to remain in place upon execution and evaluation of a permit, except when the Department determines the utility's presence:

1. compromises safety at any time, for any facility user, or during construction and

maintenance operations,

2. prevents another utility facility from locating in the area when other alternative locations are not available,

3. creates a maintenance condition that would be disruptive to the transportation facilitiy's use or add cost to Department improvements which are not paid for by the Utility,

As a condition of permit for such facility, the Permittee shall maintain and furnish the FDOT upon request, survey records of their location and type of material. Such underground facilities shall be shown on utility relocation plans required by the FDOT.

Deactivated underground gas lines shall be shown on the utility relocation plans. For deactivation of lines see 49 CFR Part 192 and the rules of the Public Service Commission.

10.9 Appurtenances

(A) Should be aesthetically acceptable and in compliance with industry standards.

(B) Shall be placed so as to create minimum interference with the functional and maintenance operation of the transportation facility.

(C) Must not conflict with other existing facilities.

(D) Shall be located as close to the rights-of-way limits as practical.

(E) Less than 30 ft from the edge of pavement, excluding those considered not in traffic areas of curb and gutter sections, shall be designed to carry traffic. Those located in non-traffic areas of curb and gutter sections and those located greater than 30 ft from the edge of pavement shall be designed to support the FDOT'S maintenance equipment. The minimum wheel load underground appurtenances should be designed for is 16,000 lbs. This in no way guarantees the Permittee that these appurtenances will not be subject to greater loads.

Larger than 80 cubic ft and any size appurtenances which do not meet these guidelines must be submitted to the District Maintenance Engineer or designee for approval.

10.10 If any utility relocation is necessary to provide entrance or service within the transportation facility from adjacent property, the relocation expense should be borne by the Permittee who initiates the requirement for relocation and shall not reduce compensable rights, if any, granted by any prior permit. (This does not apply to public designated rights-of-ways, e.g. county roads, city streets, state parks.)

If a dispute arises, the relocation expense should be considered a matter between the property owner and the prior Permittee. In the case of an appeal, the final location will be determined by the FDOT.

10.11 All new or replaced underground facilities within the rights-of-way shall be detectable.

10.12 The removal, encapsulation, or enclosure of materials containing asbestos shall be in accordance with Sections 455.301 through 455.309, Florida Statutes**.**

10.13 Conventional methods of trenching or "plowing" in utility facilities are acceptable on FDOT rights-of-way as long as such methods will not adversely affect pavement, base, other transportation facilities or other permitted facilities.

10.14 The preferred methods for crossings under pavement or other facilities are Jack/Bore and Directional Boring. Jacking and boring operations and directional boring operations shall comply with FDOT Standards Specifications$_3$. (See Section 555-Directional Boring, and Section 556-Jack and Bore) The Permittee shall be responsible for the appropriateness and success of the methods and standards used.

10.15 Open cutting of existing pavement should only be used when directional boring and jack/boring are not feasible. Open cutting operations shall be in accordance with Standard Index$_2$ No. 307, Utility Cut. (Other Indexes, such as Index No. 505, Embankment Utilization, may apply).

10.16 No underground crossing operation shall begin until the FDOT Inspector is on-site and agrees that all proper preparations have been made. The permit will stipulate whether an FDOT inspector is required on-site during the crossing operation.

10.17 The Permittee shall be responsible for damages to the State Transportation System caused by their work, and shall make immediate repairs necessary to return the transportation facility to its condition prior to any utility work.

Chapter 11

UTILITY SURVEY

11.1 General

In order to minimize the cost and impact upon the FDOT and the Utility, established procedures for determining the level of accuracy of a utility survey have been developed. These are termed "Level Of Locates" and are contained in this section.

The FDOT designer will attempt to accommodate all existing utilities and new utilities to be constructed concurrently with a project. The selection of typical section features, horizontal alignment and location of storm drain lines are areas that can sometimes be varied without violating safety standards and design criteria. Design features which reduce or avoid utility conflicts may involve increased cost; however, those costs may be offset by savings in construction time, claims, delays, and supplemental agreements. This makes it essential to both parties to understand the accuracy required in locating existing utilities in the field and identify who is responsible for gathering the data.

11.2 Responsibility

The Utility is responsible to obtain utility permits and develop associated project relocation schedules for the installation and maintenance of utility facilities within the right-of-way of any State Highway System. These documents require the Utility to locate as necessary any of their utilities by exposing and or furnishing survey elevations as necessary to accommodate FDOT construction. The FDOT regards the determination of the location of existing utilities on State rights-of-way as a cooperative effort between the FDOT and the utility. The degree of effort on the part of the FDOT and the utility owner will vary with the type of project, the utility, and availability of existing location information. This coordination must begin as soon as the FDOT announces its Five Year Work Program.

As a minimum, the location of existing major utilities is required on new construction, reconstruction, and add lane projects. Major existing utilities are those principal underground and aerial utilities that potentially conflict with construction activities and scheduling. It is the legal responsibility of the utility owner to identify and provide locates for major utilities within the FDOT right of way. Gravity service connections and laterals for single family residences are not considered major utilities.

While it is legally the responsibility of the Utility to locate all their utilities and provide that information to the FDOT, for construction projects, the FDOT design engineer

with the assistance of the District Utility Engineer and construction personnel should be consulted to determine the locations and levels of locate where utility information is known to be needed. The FDOT will initiate an actual survey using its own forces or under a design / surveying contract. The Utility shall coordinate with the FDOT to assure the most up to date utility information is available to the FDOT for actual field verification. Once a project is under construction, additional locates may be necessary. The Utility must coordinate with the FDOT to determine if the FDOT will assume any responsibility for locates during construction. For locates required by the FDOT Maintenance (non-construction project related) or "Sunshine One Call", it is totally the responsibility of the utility. The utility should never assume the FDOT is taking the responsibility to locate utilities.

Levels of locates are defined in Section 11.3 of this Chapter. It is the responsibility of the utility owner to provide up through a Level “B” locate on request. In some instances the utility owner can provide Level “A” locate information. If Level “A” locate information is necessary and cannot be provided by the utility owner, the measurement and documentation for the level “A” locate will be obtained by the FDOT, consultants, or others by established agreement.

Existing major underground utilities which are suspected to be located within 3 ft of proposed construction operations which would threaten the utility should be considered for Level “A” locate information. The decision to allow utilities to remain within 3 ft of new construction operations will be made by the Design Engineer in consultation with the District Utility Engineer and appropriate construction personnel.

11.3 Locates

The following identifies the level of utility locates in ascending order:

Level “D” - Existing Records
Level “C” - Surface Visible Feature Survey
Level “B” - Designating
Level “A” - Locating

Level “D” locates are information obtained solely from a review of utility records. The comprehensiveness and accuracy of such information is highly limited. Even when existing information for a utility in a particular area is accurate, there are often other underground systems that are not shown on any records. Level “D” may be appropriate for use early in the development of a project to determine the presence of utilities.

Level “C” locates are information obtained to augment Level “D” information. This involves topographic surveying of visible, above ground utility features such as poles, hydrants, valve boxes, circuit breakers, etc. Level “C” may be appropriately used early in the development of a project and will provide better data than Level “D” information alone. Designers can not be sure their design is appropriate nor can construction proceed without caution when using information for underground utilities

that is based only on Level “D” and “C” locates.

Level “B” locates are information obtained through the use of designating technologies (e.g. geophysical prospecting technologies). This is an application using scanning technologies, most of which have very specific capabilities and limitations that vary with site conditions. Applying a variety of techniques is essential to the process of preparing a comprehensive horizontal map of utilities and other underground structures on the site. Designating technologies are capable of providing reasonable horizontal information but provide limited vertical information.

Level “A” locates provide the highest level of accuracy of utility locations in three dimensions. This level may apply manual, mechanical or nondestructive (e.g., vacuum excavation) methods to physically expose utilities for measurement and data recording. Levels “B”, “C”, and “D” locates are incorporated in Level “A” locates. The designer should obtain Level “A” locates at highway/utility conflict points where verified information is necessary.

11.4 Subsurface Utility Engineering

Subsurface utility engineering (SUE) is an established engineering technology that can provide horizontal and vertical locations of underground utilities to produce an accurate picture of underground infrastructure. The techniques of SUE may be appropriate for certain FDOT projects where Levels “A” and “B” locates are determined to be essential. Each FDOT District has contracts for SUE. The Utility should determine if location of their facilities are covered under the FDOT design, construction and maintenance activities.

Chapter 12

ACCOMMODATION OF UTILITIES ON LIMITED ACCESS RIGHTS-OF-WAY

12.1 Limited Access Policy

12.1.1 The FDOT's Limited Access Policy is established cognizant of 23 U.S.C., Parts 109 & 111, and Federal-Aid regulations which govern use and points of access to any limited access rights-of-way on the Federal Aid Highway System. This policy applies to all limited access rights-of-way use on the State Transportation System except for utility facilities required for operating and providing service to facilities on limited access rights-of-way.

12.1.2 The Limited Access Policy prohibits new utilities from locating longitudinally within limited access rights-of-way.

12.1.3 All utility accommodations other than existing or new longitudinal encroachments approved by exception to the Policy on limited access rights-of-way shall comply with standards and criteria set forth in this Chapter.

12.1.4 The Limited Access Policy disallows utility attachments to bridge structures on limited access rights-of-way.

12.1.5 Trails and Bikeways **-** These type facilities will be treated in the same manner as Limited Access Facilities for purposes of accessibility. However, for criteria purposes, new construction standards will be applied and adjusted as appropriate.

12.2 Permitted Utility Activities On Limited Access Facilities Posted Speed > 50 MPH

12.2.1 Utility/Light Poles - All new utility/light pole installation locations shall be in accordance with the UAM new construction criteria.

12.2.2 Crossing (Aerial) - Aerial crossings require 24 ft minimum vertical clearance over limited access facilities. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule. No poles or structures will be permitted within rights-of-way of the main travel way.

12.2.3 Crossing (Underground)- Underground crossings require a minimum vertical clearance of 48 in below the pavement surface of the limited access facility. For other connecting or crossing highways located within the limited access or controlled

access zone, 36 in below the pavement surface, or 30 in below unpaved ground, including ditch grade, is required. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. After the pavement has been constructed, no open cuts will be allowed. Where a high pressure gas or volatile fuel line is located under an FDOT bridge, attachments shall comply with Section 5.4 of this manual.

Refer to Chapter 10 regarding alternative methods of underground installation.

Chapter 13

EXCEPTIONS

13.1 Exceptions: (Applicable To All Types Of Work)

General

Conditions may arise or exist in the field that make it impractical or cost preventive to comply with a particular design criteria or standard. Where compliance with a roadway design criteria or standard is impractical, an “Exception” must be obtained. Exceptions may be requested from criteria or standards. Exceptions are not to be interpreted as compromising safety or quality.

The FDOT requires a formal process for documenting and approval of deviations from criteria and standards used within the FDOT rights of way. This is to ensure cost effectiveness and sound engineering principles are applied.

The FDOT's roadway design criteria and standards usually fall within the desirable ranges established by AASHTO and where they deviate they have been accepted by FHWA and govern the design process. When it becomes necessary to deviate from the FDOT’s criteria, early documentation and approval is required. When the FDOT’s criteria is met, no Design Exception is required.

In those cases where specific guidelines are not defined and the criteria can not be complied with, the only recourse is to relocate or acquire an exception through the District Design Engineer.

It is the responsibility of the Utility to initiate a request for an exception when compliance with FDOT criteria can not be achieved. It is also the responsibility of the Utility who is requesting an exception to develop the documentation and submit it to the District Design Engineer for processing and approval. If the Utility design or relocation is being prepared by forces other than the Utility, the submittal must be signed and sealed by a professional engineer. All exception requests shall comply with the documentation and study requirements contained in Section 13.5 of the UAM. This shall also include any services required to substantiate the request with the following exceptions:

(A) The FDOT will furnish to the Utility upon request a copy of any safety study accomplished for a project under consideration for improvement,

(B) The FDOT will furnish to the Utility upon request a copy of any information related to its Five Year Work Program.

To expedite the approval of exceptions it is important that the correct approval processes be used. This Section includes specific documentation and approval requirements for an Exception. The Utility must clearly document the action taken and approval given. To aid in the decision processes, identification and processing of Exceptions, flow charts and considerations have been provided as Exhibit B through I.

In the event an exception has been denied by the FDOT District Office and the Utility believes the denial to be unreasonable, there is an escalation process. Prior to pursuing this process, the Utility must have supplied the appropriate support documentation in a timely manner and in accordance with the UAM. If this has been accomplished, the Utility in its sole discretion, may escalate the request for an exception directly with the Office of the State Roadway Design Engineer for a determination. Such determination will be made by the State Roadway Design Engineer within ten (10) working days.

13.2 Types of Exceptions:

Exceptions are required when any one of the following criteria or policies are not complied with:

(A) Vertical Clearance
(B) Horizontal Clearance
(C) Limited Access R/W Use
(D) Control Zone Use

Exhibit A is provided as an example document for requesting an exception. To assist in determining criteria, the following tables are provided with excerpts that relate to utilities as copied from the "AASHTO Policy On Geometric Design Of Highways And Streets" 1990 edition.

13.3 Concurrence and Approval of Design Exceptions

Design Exceptions on projects having full federal oversight and involvement require a recommendation by the District Design Engineer for approval by the FHWA Division Administrator. All other projects are recommended by the Responsible Professional Engineer for approval by the District Design Engineer. A public or private utility may submit to the District Design Engineer a completed exception package for work designed by the utility's own forces. However, if the design is by others, the package must be submitted, signed and sealed by a professional engineer registered in the State Of Florida.

Any Design Exception for Design Speed on the FIHS system shall require concurrence from the State Highway Engineer. All other Design Exceptions require

concurrence from the State Roadway Design Engineer.

Design Exceptions impacting the geometry, vertical clearance, or layout of structures, or superstructure cross-slope require concurrence from the State Structures Engineer.

Any Design Exception that reduces vertical clearance over an interstate roadway to less than 16.5 ft requires FHWA to coordinate with Military Traffic Management Command (MTMC) before the District Design Engineer can approve the Design Exception.

13.4 Coordination of Design Exceptions

In order to allow time to research alternatives and begin the analysis and documentation activities, it is critical that Design Exceptions be identified as early in the process as practical. This is preferably done during the PD&E phase for major projects and during the scope development phase for minor projects.

When the need for a Design Exception has been determined, the District Design Engineer or Responsible Professional Engineer must coordinate with the appropriate persons identified above to obtain conceptual concurrence and any required documentation requested. This coordination may be expedited (not required) by reviewing the Design Exception with the District's FDOT Area Design Engineer.

For Design Exceptions requiring FHWA approval, the District Design Engineer must also coordinate with FHWA to obtain conceptual concurrence and any required documentation requested by FHWA. This is usually done by also reviewing the Design Exception with the District's FHWA Area Engineer. It is good practice to review the Design Exception with both the Area Engineers at the same time. This will help expedite the approval and concurrence process.

Exception approval should be obtained no later than the initial engineering phase. The later in the design phase an exception is sought, the less likely it can be accommodated without having adverse affects on the project.

13.5 Justification and Documentation of Design Exceptions

The objective of the Utility should be to demonstrate to the FDOT that the cost of relocating is greater than the benefit. This is a benefit / cost assessment. A Benefit / Cost Assessment is not always required if other determining factors are such that a decision can be made without this effort. When a Benefit / Cost Assessment is necessary, the AASHTO Roadside Design Guide shall be used for flush pavement roadway sections. Either the Roadside Design Guide or empirical methods (at the Utility's option) must be used for curbed roadway sections. An Assessment should

include any added benefits of meeting the criteria. All Design Exception requests shall include documentation sufficient to justify the request and independently evaluate the safety impacts.

To meet State and Federal requirements, any Design Exception request must include documentation addressing the following issues:

(A) Description
(B) Safety Impacts
(C) Benefit / Cost Analysis
(D) Conclusion and Recommendation

The above information is to be attached to or summarized if possible, on Form Exhibit A and submitted to the district as appropriate.

See "EXHIBITS B through I" for general guidelines on Exception Considerations and Flow charts for Exceptions and Utility Location Decisions.

See “Exhibit B” for “General Exception Considerations”.
See “Exhibit C” for “Exception Considerations for the Designer”.
See “Exhibit D” for “Exception Considerations for the Utility”.
See “Exhibit E” for “Generalized Location Decision Flow Chart”.
See “Exhibit F” for “Utility Exception Flow Chart”.
See “Exhibit G” for “Exception Scenarios on RRR projects”.
See “Exhibit H” for “Control Zones”.
See “Exhibit I” for “Project Type Location and Relocation Decision Flow Charts”.

13.6 Concurrence Review of Design Exceptions

After conceptual approval of the exception (per Section 13.4) has been obtained from the State Highway Engineer, State Roadway Design Engineer, FHWA, and the Structures Office, as required above, and the documentation justifying the Design Exception is signed and forwarded as per the sample request letter Exhibit A to the State Roadway Design Engineer, the Design Exception will be reviewed for completeness and adherence to the requirements.

If the Design Exception complies with all requirements, the concurrence will be signed by the appropriate persons. When necessary, the Design Exception will be forwarded to FHWA for approval.

Once all signatures are obtained, the Design Exception will be returned to the District Design Engineer or Responsible Professional Engineer. A copy will be retained by the State Roadway Design Engineer.

EXHIBITS

FORM 710-010-61
UTILITIES
01/99

TO:[a] _____

DATE: _____

SUBJECT: UTILITY EXCEPTION

FPN : _____ **State Road Number:** _____

Fed Aid No: _____

Project Description: _____

Check Applicable Construction Type: ( )New ( )RRR ( ) Resurfacing Only

Check which Exception Element/s is affected:

( )Vertical Clearance ( )Horizontal Clearance ( )Limited Access R/W Use ( )Control Zone Use

Describe the specific nature of the Exception[b] below:

_____

_____

_____

_____

_____

_____

_____

_____

_____

Recommended (Utility)[c]: _____
Name, Title, Company

Recommended (FDOT)[d]: _____
Name, Title, District

Approval[e] : _____

Concurrence[f]: _____ _____
State Structures Design Engineer **State Roadway Design Engineer**

(a) Exceptions on projects having full federal oversight and involvement are addressed to the FHWA Division Administrator. All other Exceptions are sent to the District Design Engineer.
(b) Include a brief statement concerning the project and elements of concern. Indicate the reason/s the Exception is being requested in accordance with Chapter 13 of the Utility Accommodation Manual. Attach all supporting documentation to this exhibit.
(c) Exceptions are recommended by the Utility when designed by Utility forces, otherwise a Responsible Professional Engineer must recommend the exception for the Utility.
(d) Exceptions on projects having full federal oversight and involvement require a recommendation by the District Design Engineer in addition to the Utility.
(e) Exceptions on projects having full federal oversight and involvement are approved by the FHWA Division Administrator. All other Exceptions are approved by the District Design Engineer.
(f) All Exceptions require the concurrence of the State Roadway Design Engineer. Exceptions impacting the geometry, vertical clearance, layout of structures, or superstructure cross-slope require concurrence from the State Structures Design Engineer.

GENERAL EXCEPTION CONSIDERATIONS:

The following considerations are for guidance and do not reflect every scenario. They are for the purposes of establishing consistency in application and decision making. The FDOT engineer and the Utility should look beyond what is provided herein as the specific site conditions warrant with a view to providing or improving safety where practical. Both the Utility and the FDOT are encouraged to discuss and mutually agree upon the basis of decisions which exceed those contained herein.

In the design and permitting process, many considerations are appropriate to evaluate the reasonableness of approving an exception. Designers and Utilities should be familiar with all exhibits describing decision processes and control zones to improve safety and establish uniformity of application. Exhibits are provided for general and specific cases and types of construction. Caution is advised since some conditions are acceptable for existing infrastructure but would not be approved for new construction. Some typical concerns that must be addressed to properly understand the pros and cons of making a decision include Criteria, Safety, Function, and Benefit to Cost Ratio. These are generalizations. Every site under consideration has a unique environment and set of conditions to evaluate. It is impossible to address all scenarios which may exist. For this reason it is not appropriate to say under certain conditions an exception will always be given. Similarly it can not be said under certain circumstances an exception will always be denied. With that in mind, both the Utility and the Designer must look at the precepts contained herein and apply them accordingly.

The Utility is a statutorily authorized partner in the use of the rights of way that the FDOT manages. The Utility shares the responsibility to maintain a safe user environment. The actions of either party can effect safety negatively or positively. Each party must begin their evaluations by establishing first what is the safest thing to do. If that proves too costly, alter the proposal until an acceptable balance is reached between benefit and cost. What follows are three separate lists. The first describes what must be considered by the roadway engineer before denying or approving a utility exception. The second list describes what a Utility must consider in justifying and requesting an exception. The third list provides guidance by identifying scenarios in which an exception would normally be given to a Utility except in site specific cases where extreme conditions exist or where control is beyond the authority of the FDOT. All three lists are designed to achieve balance and consistency. Finally, a flow chart is provided to ensure the thought process places issues in the proper priority in making a decision about approval or denial of an exception.

EXCEPTION CONSIDERATIONS FOR THE DESIGNER:

Some pertinent questions which are required to be considered before the roadway designer or utility engineer recommends relocation of an existing utility facility and in granting an exception are:

CRITERIA:

(1) What is the applicable FDOT criteria, new construction or RRR?
(2) Is the FDOT standard criteria appropriate for the site condition?
(3) Does the standard criteria provide for the optimum safety, function and benefit/cost ratio?
(4) Is the ultimate project typical section being developed or an interim fix, and if so which controls, and has the Utility been told which? (The utility should not be required to relocate or address the same issue again in the near future.)
(5) Existing permitted facilities are to be evaluated against the criteria in place when they were installed and considered for relocation on RRR Projects only when determined to be in a control zone as defined in this RRR Section.

SAFETY:

(1) Has a safety study been prepared covering the most recent 5 years identifying crash history and any roadway element deficiencies?
(2) Is there a significant number of recorded crashes for the corridor?
(3) Even if unrecorded, is there visible evidence of crashes (scraped poles, bent signs, etc.) or are they highly predictable?
(4) Are historical crashes related to any specific roadway element such as alignment (curve or kink), signing (lack of, confusing, blocked view), roadway intersection, lane add or drop, major driveway entrance or exit, roadway surface condition, and posted speed or sight distance?
(5) Are there other features along the corridor in question that do not meet horizontal clearance criteria such as signal or light poles, landscaping, controllers, or other similar features?
(6) Can an above ground fixed object (e.g., pole) be relocated in compliance with horizontal clearance criteria within the rights of way and not impact other utilities or roadway features?
(7) Can minimum horizontal clearance criteria be exceeded (e.g., new construction criteria) without significant Utility impact?
(8) Are there roadway typical section features such as on street parking (not to be removed) or bike lanes that provide additional pole separation from the through lane?
(9) If a geometric revision will eliminate the problem, is it practical and cost effective to include it in the project?
(10) Will the proposed pole relocation prevent compliance with ADA horizontal clearances?
(11) Will pedestrian traffic benefits be reduced by utility relocation?

(12) Will the desired relocation violate any national utility code or other state or local ordinance?

(13) Are there existing, or can future overhead clearance conflicts be foreseen such as canopy overhangs or construction problems?

(14) Are pole(s) located in an area where an exception is acceptable and allowed to remain or are they located in a designated control zone in which case they should be removed as appropriate?

FUNCTION:

(1) Is there sufficient Right of Way to relocate within the rights of way without violating codes or criteria whether FDOT or Utility (State, Federal or Local)?

(2) Will the utility relocation require more than one move?

(3) Can the number of poles to be relocated, be limited to one?

(4) Will relocating a pole(s) longitudinally solve the problem as opposed to changing the horizontal offset?

(5) Will the relocation force the utility to be inaccessible (behind a ditch or canal) or placed in an area of high maintenance (fast growing trees or underground and susceptible to increased lighting damage)?

BENEFIT/COST:

(1) What is the estimated cost to the utility company to relocate?

(2) Does the utility company have future plans in place to relocate or replace the pole(s)?

(3) Are there underground utility conflicts that will result from relocating a pole(s) to a new location and if so, can the underground utility be physically or cost effectively relocated?

(4) What is a reasonable Benefit (Anticipated Reduction in Societal Costs)/Cost (Utility Relocation Costs)ratio for this particular corridor for a Utility to be relocated? (e.g., Does the relocation cost exceed damage estimates by a factor of 2, using the Roadside Design Guide Program?)

(5) Will the available distance a pole(s) can be moved provide a reasonable benefit? (e.g., normally 4 ft or more, or behind a fixed barrier.)

(6) Consider the following scenario. There is room to relocate the pole(s) without conflicts and there is no physical reason the utility can not move. There is no substantial crash evidence (written or visible), therefore, the Benefit to Cost Ratio is not high. Is there a basis other than clearance criteria to require the utility to move?

Any one of the following conditions are examples of when an exception may be appropriate, assuming the utility facility is not located in a control zone:

(A) When the desired relocation area would force a Utility to violate other State or National Codes whether they be electrical, gas, environmental or ADA requirements. In instances where a significant crash history exists, an exception probably is not warranted.

(B) When the FDOT's criteria was not formulated to address the specific site conditions being observed on a project.

(C) When the facility is or would be in violation of criteria but the intent can best be served using other values.

(D) If the FDOT project scope is an interim fix rather than the ultimate section.

(E) When compliance can not be accomplished within the desired project time frame.

(F) When the required offset measured from the curb is not met if the offset from the travel lane is mitigated by a clearly marked (striped) bike lane or on street parking. (Care should be taken to ensure these mitigating elements are permanent features. If these elements are to be removed, the above ground fixed object must be evaluated for relocation and scheduled accordingly. It is important to identify proposed locations and not allow other utilities to use this area.)

(G) When there is an established hardship or the tangible benefit of relocation is not supported by benefit to cost ratios.

(H) Significant safety improvements would not be attained by forcing a relocation offset of less than 4 ft.

(I) The utility facility is not located in a control zone and crash data or field analysis does not indicate the presence of a significant hazard.

(J) Adjustment or relocation of the facility would conflict with other acceptably located facilities.

(K) Insufficient rights of way to comply.

(L) Other reasons will be considered on a case by case basis.

EXCEPTION CONSIDERATIONS FOR THE UTILITY:

Justification Process and Documentation of Utility Exceptions

The objective of the Utility should be to demonstrate to the FDOT that the cost of relocating is greater than the benefit. This is a benefit / cost assessment. This includes any added benefits of meeting the criteria. All Design Exception requests shall include documentation sufficient to justify the request and independently evaluate the operational and safety impacts. It will be advantageous to the Utility to review and give attention to the considerations of the design engineer. In this way both parties are not only addressing the minimums but considering all issues together.

The assessment documentation does not have to and rarely entails a full blown analysis. Most of the issues that must be addressed can be done in one line statements. In many cases the conclusions are obvious. For example, if there were no alternative locations, a simple statement to the effect “moving back 4 ft would require a violation of ADA or National Electric Codes”, or “moving back 4 ft requires acquisition of an easement or r/w or removal of a building”. It is also acceptable to provide costs based on tax assessor front foot values and adding overhead costs without extensive details. Whatever is stated must be logical and within reason. Of significance is that each of the listed considerations be addressed and documented because the limiting condition for which an exception is being sought may not exist ten years later when a claim is brought forth.

To meet State and Federal requirements, any Design Exception request must include documentation addressing the following issues:

- **Description**
  - **(a)** Project description (general project information, typical section, etc.)
  - **(b)** Description of the Exception (specific project conditions related to the Exception, Critical Design Element, acceptable AASHTO value and proposed value for project)

- **Safety Impacts**
  - **(a)** Crash History and Analysis (location, type, severity, relation to the Exception element for the most recent five years of accident data) Note: Upon request of the Utility, the FDOT will furnish the accident history for the area and the Utility will analyze it identifying accidents, locations, severity, et cetera.
  - **(b)** Impacts associated with proposed criteria (this could be annualized value of expected economic loss associated with crashes or present worth where a detailed analysis is used, or if obvious, a one line statement of cost based on property acquisition and overhead)

- **Benefit / Cost Analysis**
  Calculate a benefit / cost analysis which estimates the cost effectiveness of correcting or mitigating a substandard design feature. The benefit is the expected reduction in

societal costs (future accident costs, insurance, workman's compensation, etc. The cost is the direct construction and maintenance costs associated with the design and relocation. These costs may be calculated and annualized or made present worth so that a direct comparison of alternate designs can be made. Chapter 2 of the Roadside Design Guide and the FHWA Technical Advisory titled "Motor Vehicle Accident Costs" and dated October 31, 1994 provides guidance on performing a benefit / cost analysis. For actual cost data the Utility should seek the latest available data published for this purpose.

Achieving a benefit / cost ratio of less than or equal to 2.0 would mean the FDOT would not require relocation except in the most extreme cases or conditions beyond its control. This is a conservative value for the utility and allows for many unknowns in the equation. The final decision is a management decision which considers all factors important to the successful implementation of the Department's mission.

The key factors in the analysis are:

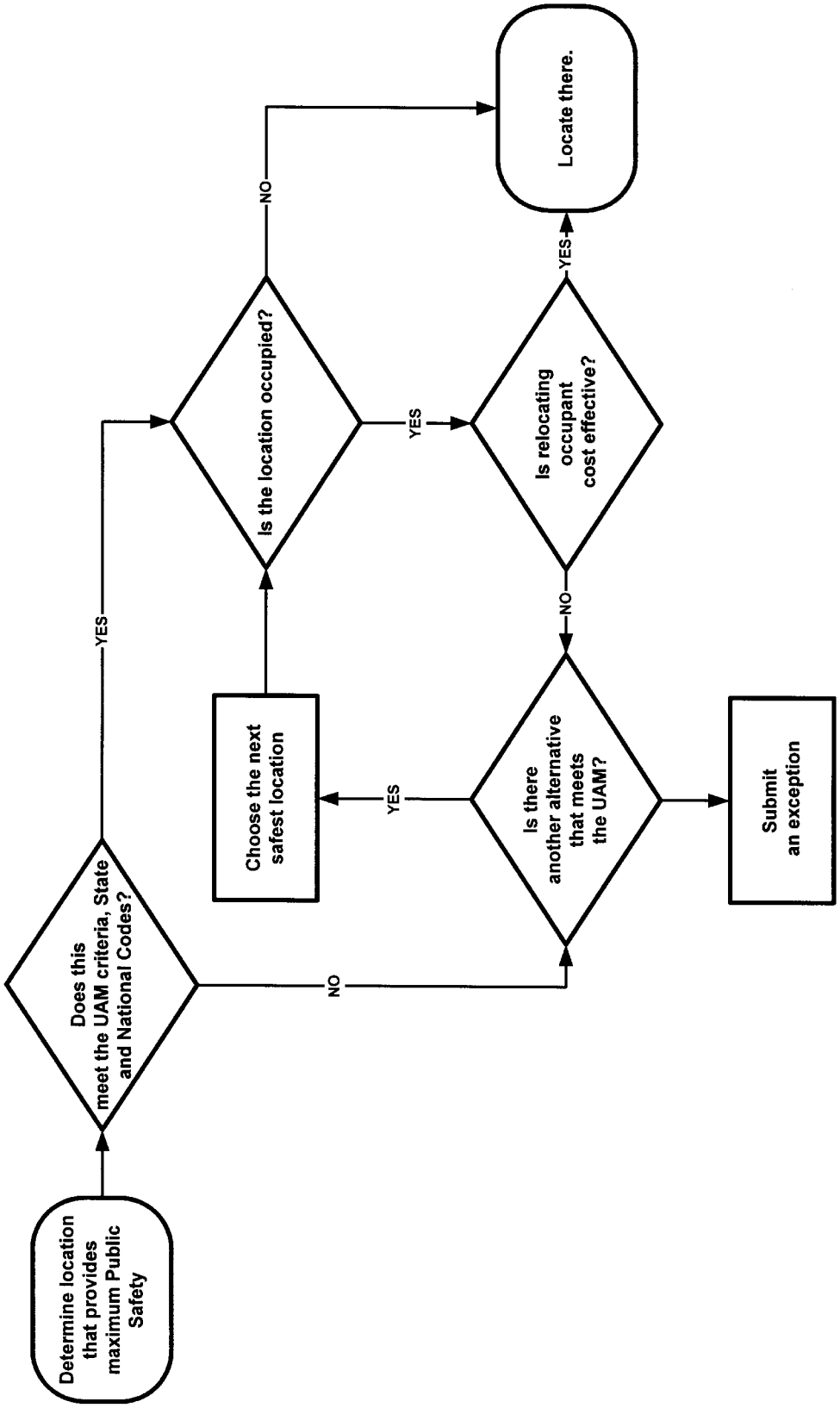
(a) Evaluation of crashes by type and cause,
(b) Estimate of crash costs (based on property damage and severity of injuries),
(c) Selection of a crash reduction factor,
(d) Selection of a discount rate,
(e) Estimate of construction and maintenance costs,
(f) Selection of life of the improvements,
(g) Period of time over which the benefits will be realized.

! **Conclusion and Recommendation**

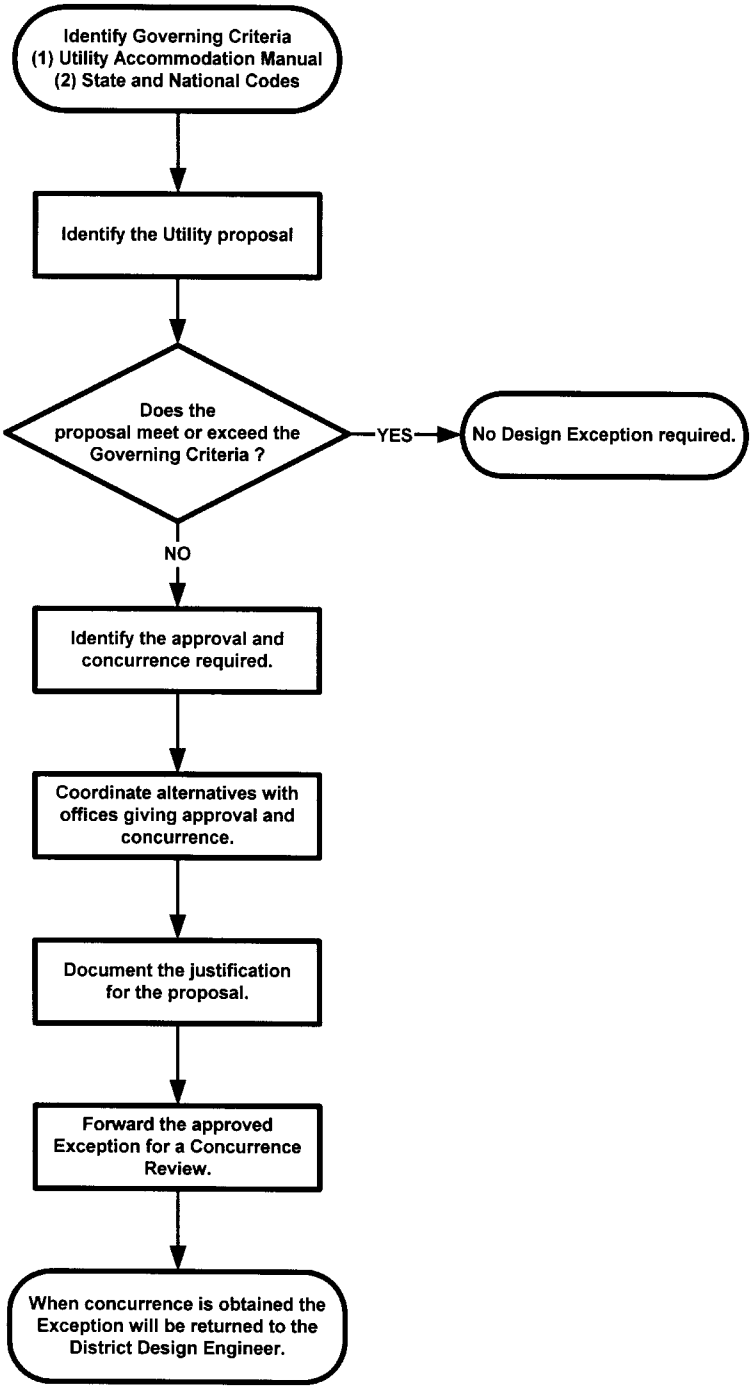
(a) The cumulative effect of other deviations from design criteria,
(b) Safety mitigating measures considered and provided,
(c) Summarize specific course of action. (Include conditional requirements such as projects in the Five Year Work Program that will fix a deficiency).

Generalized Location Decision Flow Chart

for Locating Utilities within FDOT R/W (Above or Below Ground or as an attachment)



Utility Exception Flow Chart



SCENARIOS FOR APPROVING EXCEPTIONS ON RRR TYPE PROJECTS

FOR PLACEMENT OF ABOVE GROUND FIXED OBJECTS: The probability of approving exceptions to above ground fixed object relocation decreases with crash history and directly observable impact evidence. This exhibit describes scenarios and conditions that must exist for an exception to be approved. This exhibit gives general conditions and probable recommendations for typical situations without extreme or unforeseen conditions. Where extreme or a-typical circumstances exist, the District recommendation may not follow this example. Scenarios for approving exceptions, with and without crash history or impact evidence, follows.

If there is no documented crash history in the most recent five years nor direct observable impact evidence, given the following four conditions exist simultaneously:

1. Curb or flush shoulder alignment does not change horizontally.
2. The object is not located in a Control Zone or LA R/W.
3. The posted speed limit does not exceed 45 mph.
4. Utility location causes no slowing or redirecting of traffic.

An exception would normally be approved if any one of the following conditions exist.

- **!** Insufficient room to relocate in the right of way.
- **!** One utility would have to relocate in order to put another in its position.
- **!** The object can not be relocated more than 4 ft.
- **!** Relocation would cause a conflict with other state or national safety codes.
- **!** A minimum of 6 ft horizontal offset exists between the traveled way and the above ground fixed object.
- **!** The relocation benefit / cost ratio is less than or equal to 2.

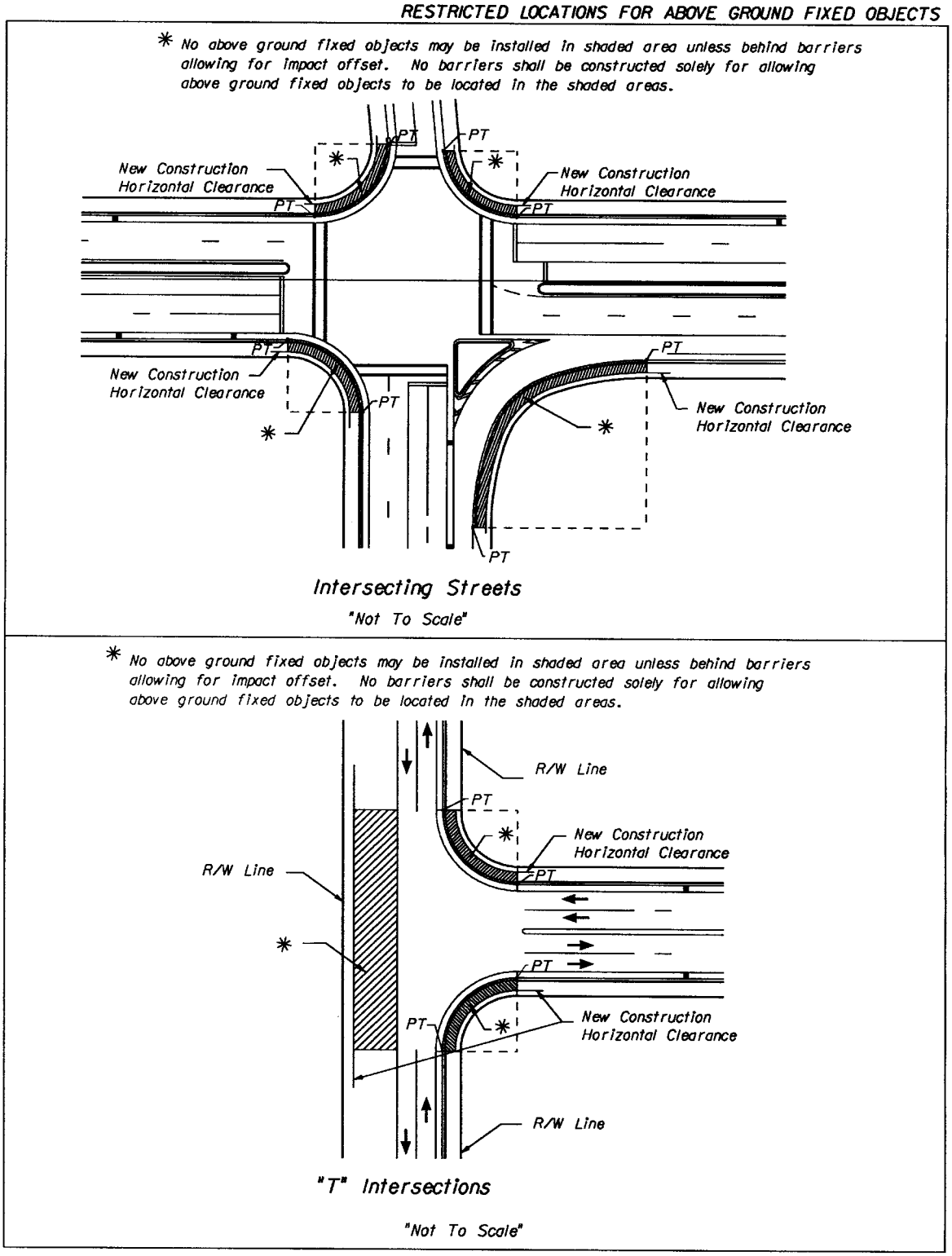
If there is documented crash history in the most recent five years or direct observable impact evidence, and given the above four numbered conditions exist simultaneously:

An exception would normally be approved if any one of the following conditions exist.

- **!** No practical design alternative.
- **!** The relocation benefit / cost ratio is less than or equal to 2.

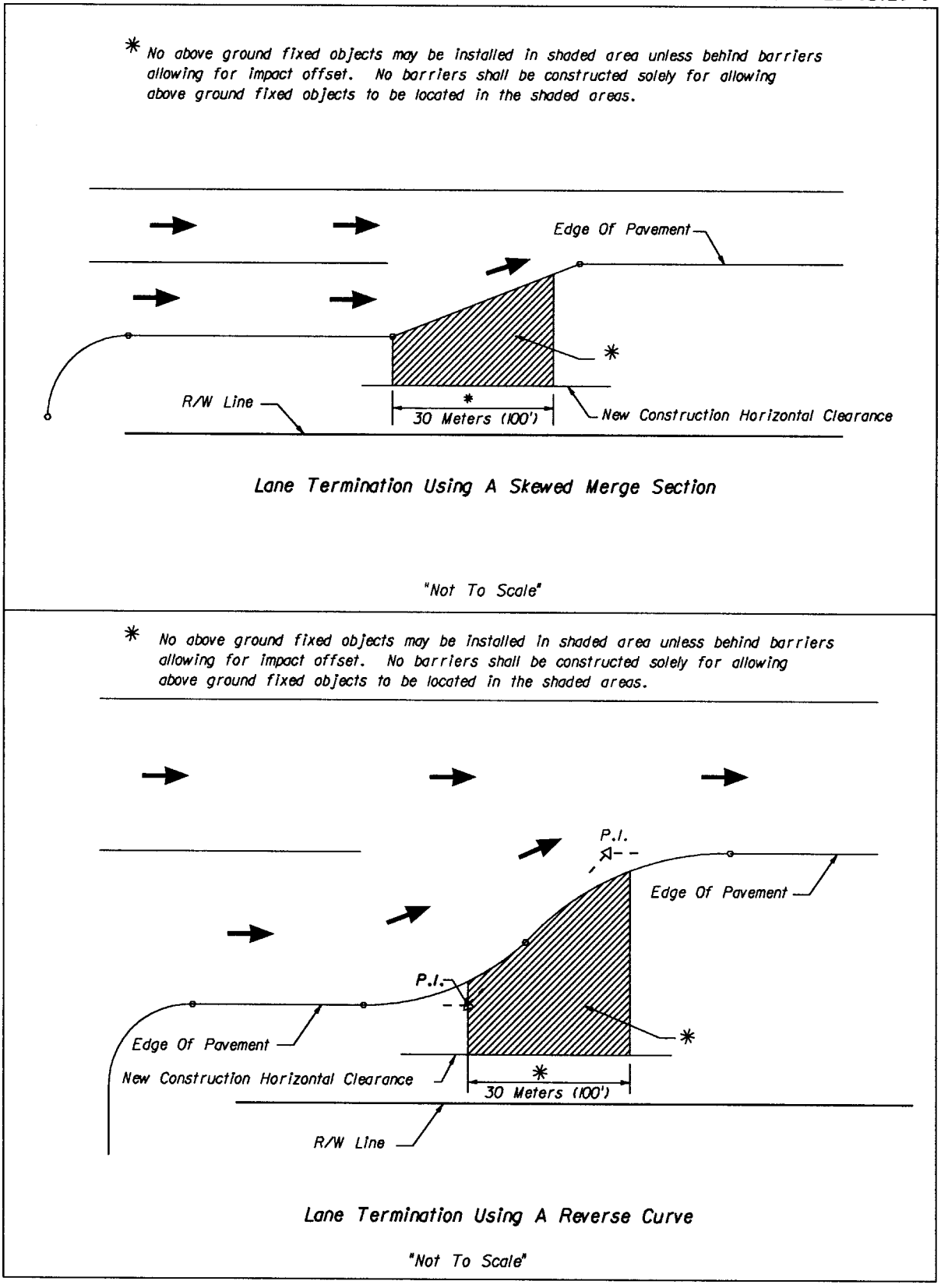
FOR PLACEMENT OF BELOW GROUND OBJECTS, MATERIALS OR METHODS: Exceptions are approved only by demonstration of a hardship. The hardship must be demonstrated by showing the FDOT policy, standards or criteria are inappropriate and supported by a benefit / cost ratio of less than or equal to 1. For purpose of computation, benefit is the expected reduction in societal costs. Cost is dollar value of impacts and implementation for all affected parties.

Control Zones



Control Zones

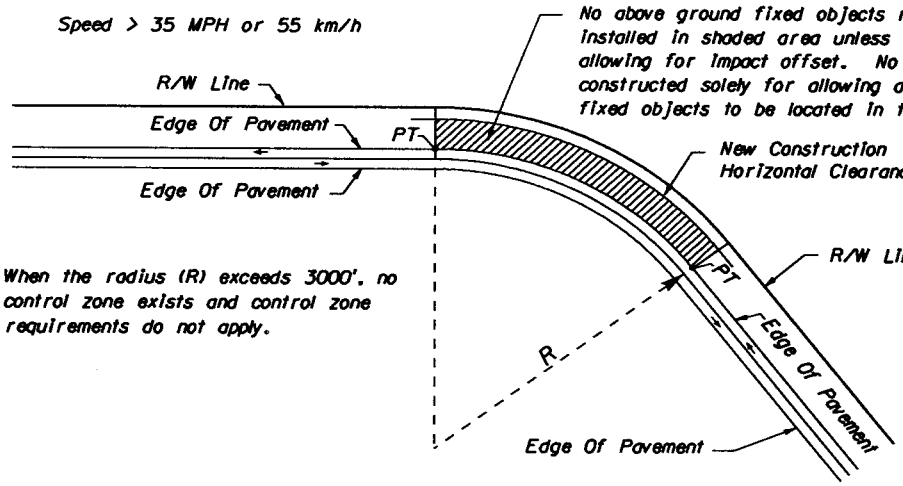
RESTRICTED LOCATIONS FOR ABOVE GROUND FIXED OBJECTS



Control Zones

RESTRICTED LOCATIONS FOR ABOVE GROUND FIXED OBJECTS

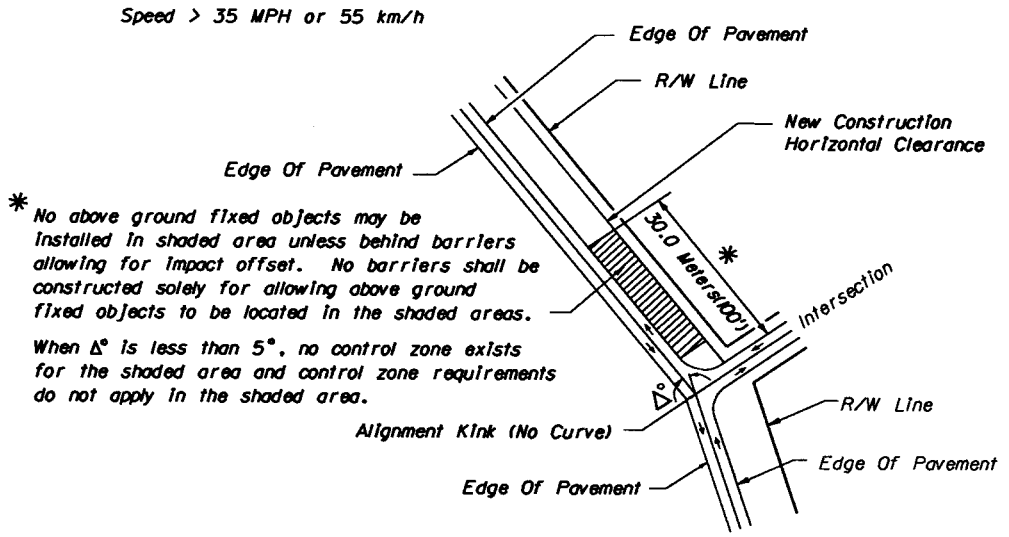
Existing Curb And Gutter Or Rural Typical Section With
No Change In Edge Of Pavement Or Existing Curb Location



Typical Curve

"Not To Scale"

Existing Curb And Gutter Or Rural Typical Section With
No Change In Edge Of Pavement Or Existing Curb Location

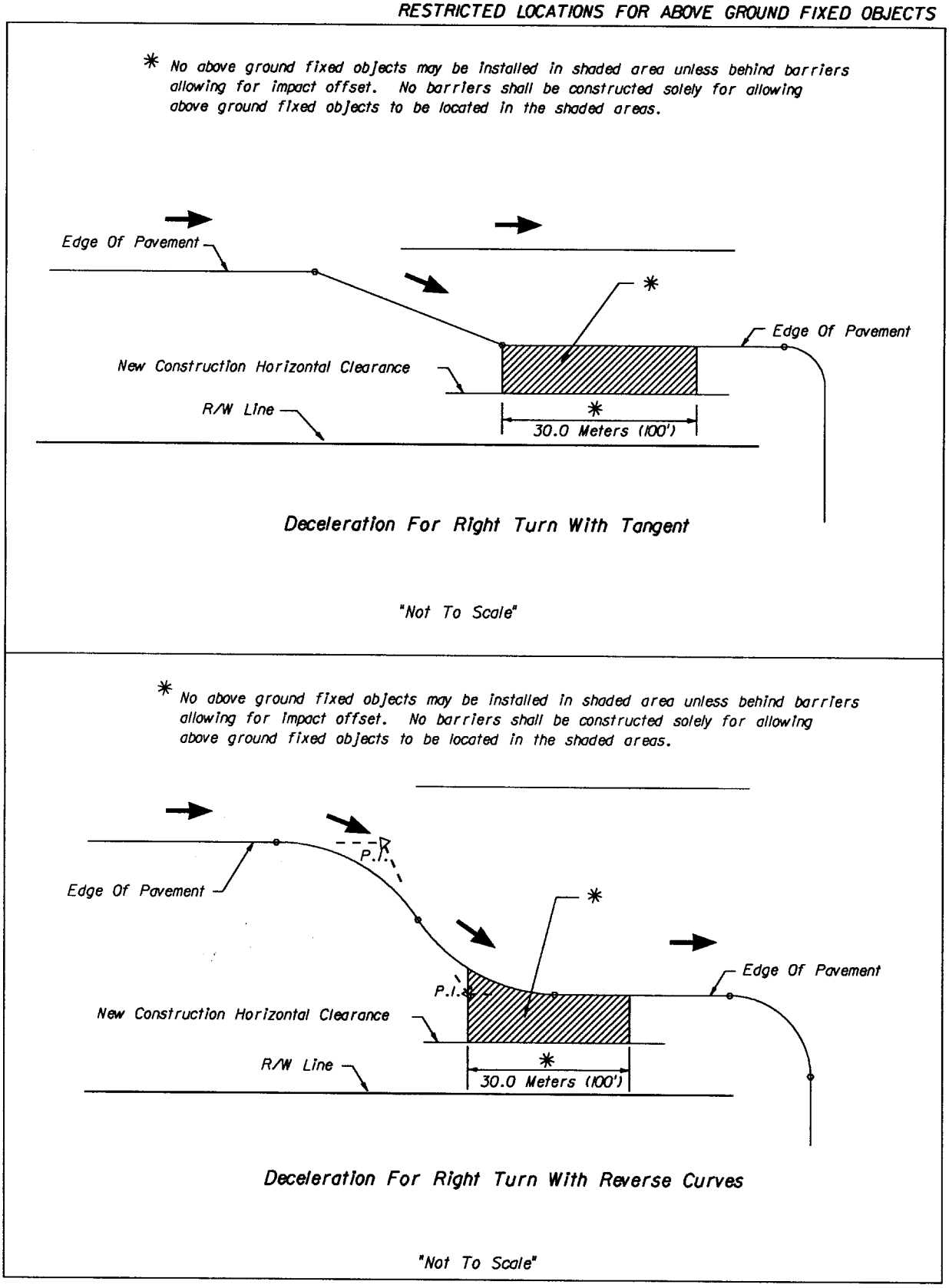


Typical Kink In Alignment

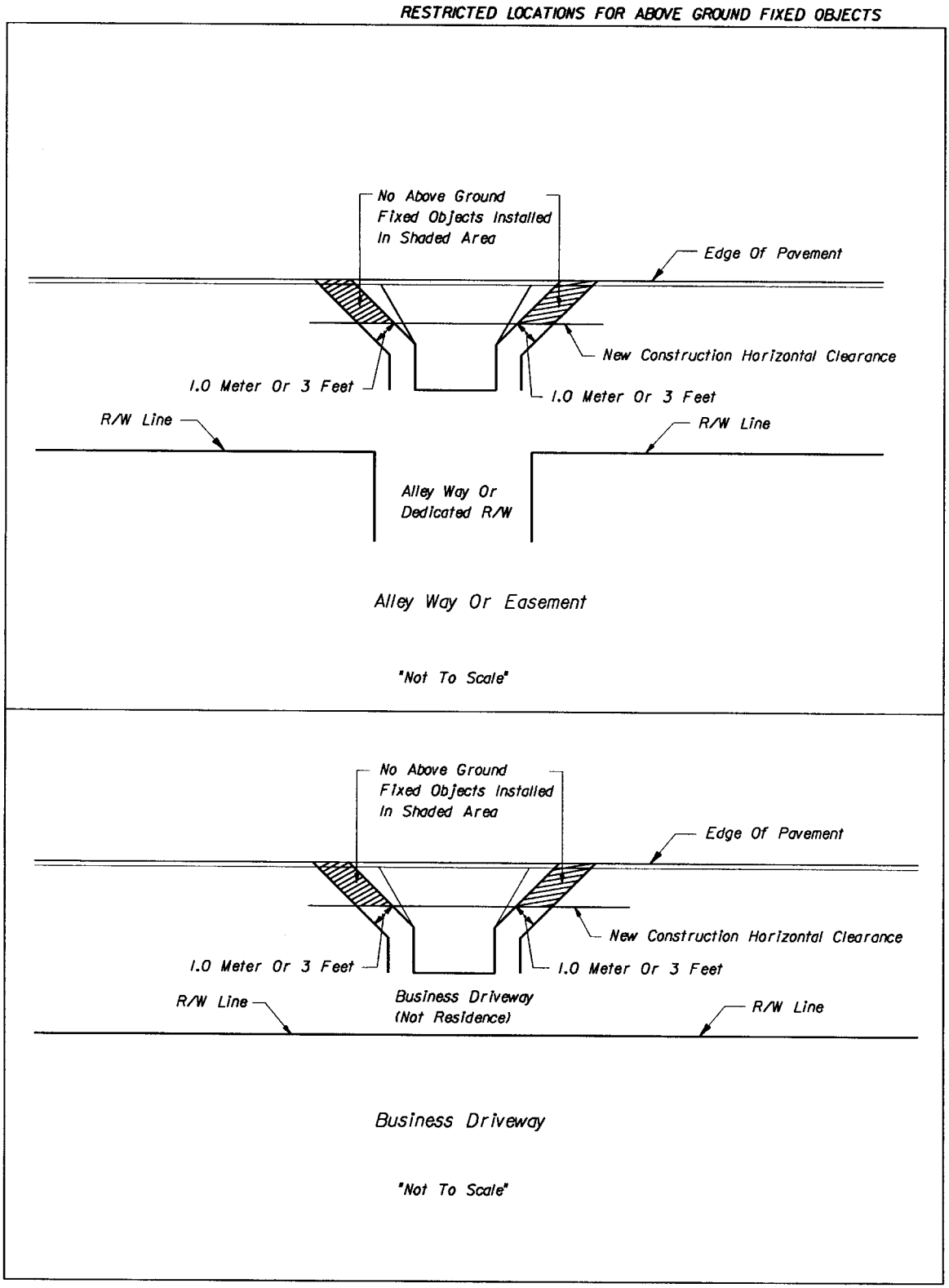
"Not To Scale"

Control Zones

RESTRICTED LOCATIONS FOR ABOVE GROUND FIXED OBJECTS



Control Zones



NEW CONSTRUCTION ABOVE GROUND FIXED OBJECTS - DECISION FLOW CHART

New Construction criteria: "As close as practical to the ROW line."
Anything less than Minimum Horizontal Clearance[3] requires an exception.

*** - Denotes while "pole" is used in Flow Chart, it is also intended to apply to any above ground fixed object**

[1] If pole set in conjunction with FDOT Reconstruction or RRR Project, see first the "Major Reconstruction" or "RRR" Pole Relocation Decision Flowchart.

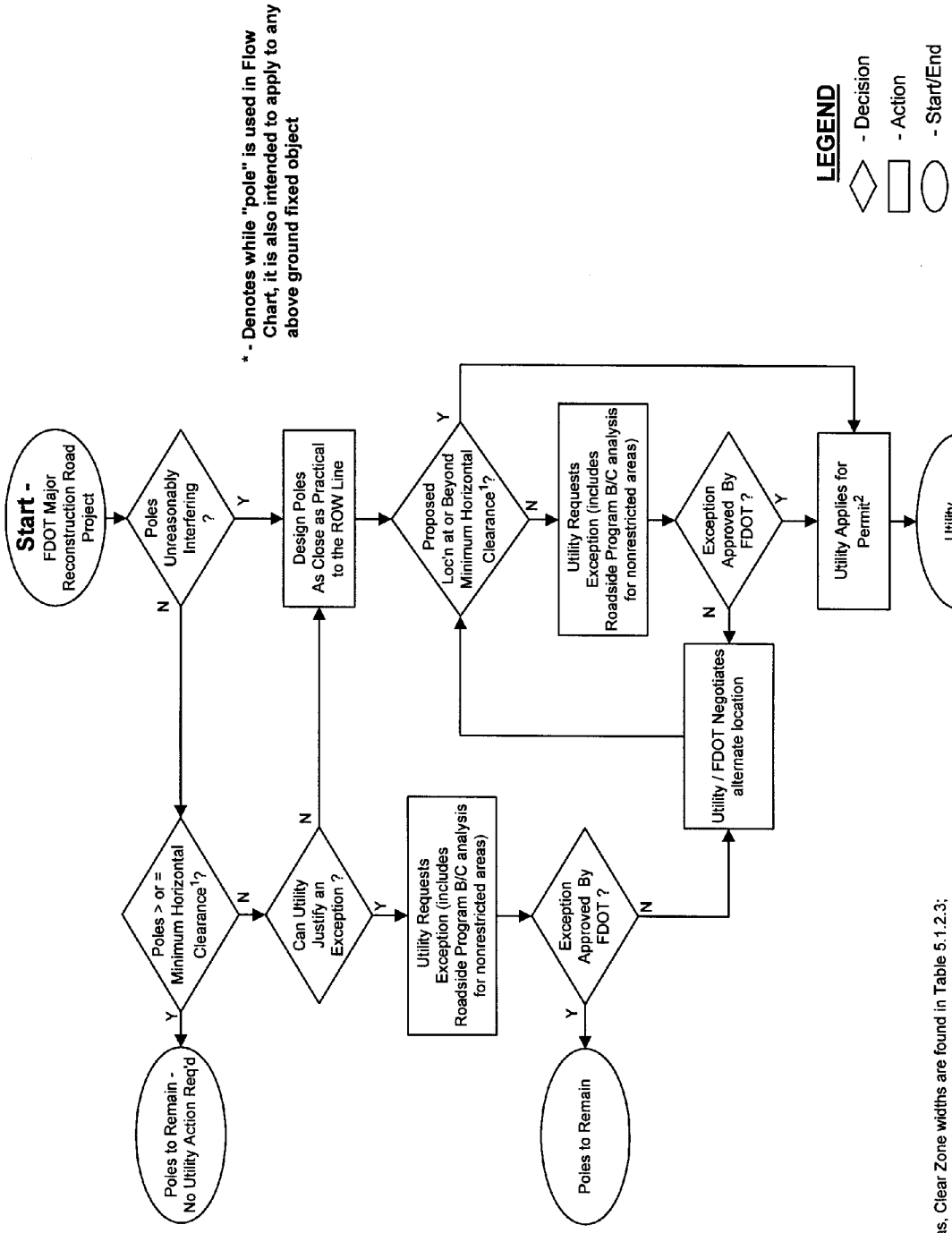
[2] As close to the ROW line as practical determined by conditions such as, but not limited to :
- Aerial Encroachment
- NESC, ADA, or other State or Federal applicable codes/regulations,
- conflicts with other existing facilities, both overhead and underground,
- trees on adjacent private property (where adequate future trimming would require encroachment on private property),
- down guying requirements,

[3] For non-restricted R/W areas, Clear Zone Widths are found in Table 5.1.2.3;
- For restricted** R/W areas, 4ft. from curb face as found in Table 5.1.2.2;
- For new midspan poles, use minimum RRR dimensions.
- For new light poles use Table 5.1.2.1.

[4] When applying for an exception, the permit is applied for concurrently.

** In Restricted areas benefit is estimated crash reduction (generally, relocation less than 4 ft is no reduction). In Non-Restricted areas, benefit is determined using the AASHTO Roadside Design Guide program.

FDOT ROAD PROJECT (MAJOR RECONSTRUCT) - POLE RELOCATION DECISION FLOW CHART

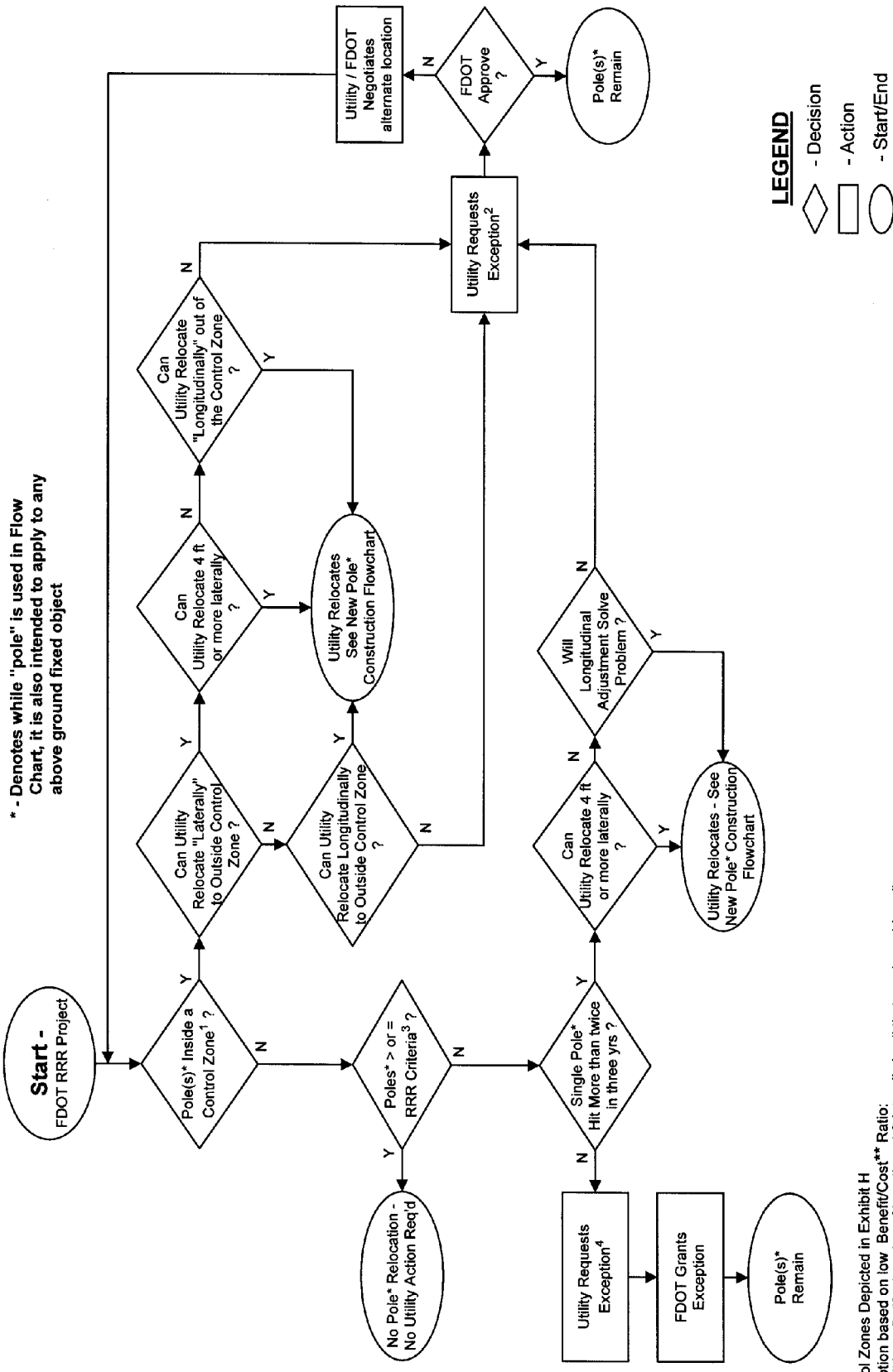


[1] For non-restricted R/W areas, Clear Zone widths are found in Table 5.1.2.3;
- For restricted** areas 4ft. from curb face as found in Table 5.1.2.2.

[2] When applying for an exception, the permit is applied for concurrently.

** In Restricted areas benefit is estimated crash reduction (generally, relocation less than 4 ft is no reduction). In Non-Restricted areas, benefit is determined using the AASHTO Roadside Design Guide program.

FDOT ROAD PROJECT (RRR) - POLE RELOCATION DECISION FLOW CHART



[1] Control Zones Depicted in Exhibit H

[2] Exception based on low Benefit/Cost** Ratio:
- small benefit (if relocation of less than 4 ft laterally is all that can be achieved).
- excessive costs (to achieve the 4 ft or more laterally, or to achieve the necessary longitudinal adjustment).

[3] Table 9.1.2.2 for Flush shoulder areas; 1.5 ft from face of curb or 6 ft from the edge of the traveled way in restricted areas.

[4] Exception justified on basis that pole(s) not hit more than twice during any 3 (consecutive) year period of the preceding 5 years.

** In Restricted areas benefit is estimated crash reduction (generally, relocation less than 4 ft is no reduction). In Non-Restricted areas, benefit is determined using the AASHTO Roadside Design Guide program.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

UTILITY PERMIT

FORM 710-010-85
UTILITIES
OGC - 01/99
Page 1 of 2

PERMIT NO.: _____ SECTION NO.: _____ STATE ROAD: _____ COUNTY: _____

FDOT construction is proposed or underway. **F** Yes **F** No Financial Project ID: _____
Is this work related to an approved Utility Relocation Schedule? **F** Yes **F** No If yes, Document Number: _____

PERMITTEE: _____

ADDRESS: _____ TELEPHONE NUMBER: (_____) _____-_____

_____

The above PERMITTEE requests permission from the State of Florida Department of Transportation, hereinafter called the FDOT, to construct, operate and maintain the following:

_____

_____

FROM: _____ TO: _____

Submitted for the PERMITTEE by: _____ _____
Name and Title (Typed or Printed Legibly) Signature Date

1. The PERMITTEE declares that prior to filing this application, the location of all existing utilities that it owns or has an interest in, both aerial and underground, are accurately shown on the plans and a letter of notification was mailed on _____ to the following utilities known to be involved or potentially impacted in the area of the proposed installation: _____

   _____

   _____
2. The local Maintenance or Resident Engineer, hereafter referred to as the FDOT Engineer, shall be notified forty-eight (48) hours prior to starting work and again immediately upon completion of work. The FDOT's Engineer is _____, located at _____ Telephone Number _____. The PERMITTEE's employee responsible for Maintenance of Traffic is _____, Telephone Number _____ (This name may be provided at the time of the 48 hour notice prior to starting work).
3. All work, materials, and equipment shall be subject to inspection and approval by the FDOT Engineer.
4. All plans and installations shall conform to the requirements of the FDOT's Utility Accommodation Manual in effect as of the date this permit is approved by FDOT, and shall be made a part of this permit. This provision shall not limit the authority of the FDOT under Paragraph 8 of this Permit.
5. This PERMITTEE shall commence actual construction in good faith within _____ days after issuance of permit, and shall be completed within ___ days after the permitted work has begun. If the beginning date is more than 60 days from the date of permit approval, the PERMITTEE must review the permit with the FDOT Engineer to make sure no changes have occurred to the Transportation Facility that would affect the permitted construction.
6. The construction and maintenance of such utility shall not interfere with the property and rights of a prior PERMITTEE.
7. It is expressly stipulated that this permit is a license for permissive use only and that the placing of utilities upon public property pursuant to this permit shall not operate to create or vest any property right in said holder, except as provided in executed subordination and Railroad Utility Agreements.
8. Pursuant to Section 337.403(1), Florida Statues, any utility placed upon, under, over, or along any public road or publicly owned rail corridor that is found by FDOT to be unreasonably interfering in any way with the convenient, safe, or continuous use, or maintenance, improvement, extension, or expansion, of such public road or publicly owned rail corridor shall, upon 30 days' written notice to the utility or its agent by FDOT, be removed or relocated by such utility at its own expense except as provided in paragraphs (a) and (b), and except for reimbursement rights set forth in previously executed subordination and Railroad Utility Agreements, and shall apply to all successors and assigns for the permitted facility.
9. It is agreed that in the event the relocation of said utilities are scheduled to be done simultaneously with the FDOT's construction work, the PERMITTEE will coordinate with the FDOT before proceeding and shall cooperate with the FDOT's contractor to arrange the sequence of work so as not to delay the work of the FDOT's contractor, defend any legal claims of the FDOT's contractor due to delays caused by the PERMITTEE's failure to comply with the approved schedule, and shall comply with all provisions of the law and the FDOT's current Utility Accommodation Manual. The PERMITTEE shall not be responsible for delay beyond its control.
10. In the case of non-compliance with the FDOT's requirements in effect as of the date this permit is approved, this permit is void and the facility will have to be brought into compliance or removed from the right of way at no cost to the FDOT, except for reimbursement rights set forth in previously executed subordination and Railroad Utility Agreements. This provision shall not limit the authority of the FDOT under Paragraph 8 of this Permit.
11. It is understood and agreed that the rights and privileges herein set out are granted only to the extent of the State's right, title and interest in the land to be entered upon and used by the PERMITTEE, and the PERMITTEE will, at all times, and to the extent permitted by law, assume all risk of and indemnify, defend, and save harmless the State of Florida and the FDOT from and against any and all loss, damage, cost or expense arising in any manner on account of the exercise or attempted exercises by said PERMITTEE of the aforesaid rights and privileges.
12. During construction, all safety regulations of the FDOT shall be observed and the PERMITTEE must take measures, including placing and the display of safety devices that may be necessary in order to safely conduct the public through the project area in accordance with the Federal Manual on Uniform Traffic Control Devices, as amended for highways, the requirements of the Standard Application Package for railways, including flagging services and Railroad Protective Insurance or acceptable alternative, when applicable, and the FDOT's latest Roadway and Traffic Design Standards and Standard Specifications for Road and Bridge Construction, as amended. When a Utility deems it necessary to conduct Traffic Control activities and methods significantly different from those addressed in the above references, the Utility must submit an alternative plan signed and sealed by a qualified registered Florida professional engineer qualified to develop Traffic Control Planning in accordance with the provisions of the Utility Accommodation Manual, Chapter 8.
13. Should the PERMITTEE be desirous of keeping its utilities in place and out of service, the PERMITTEE, by execution of this permit acknowledges its present and continuing ownership of its utilities located between _____ and _____ within the FDOT's rights-of-way as set forth above. Whenever the PERMITTEE removes its facilities, it shall be at the Permittee's its sole cost and expense
14. In the event contaminated soil is encountered by the Utility or anyone within the permitted construction limits, the Utility shall immediately cease work and notify the FDOT. The FDOT shall coordinate with the appropriate agencies and notify the PERMITTEE of any suspension or revocation of the permit until contamination assessment and remediation, as appropriate under Rule Chapters 62-770 and 62-730 Florida Administrative Code, has progressed to a state that all environmental regulatory agencies having jurisdiction have approved the site of the contamination for resumption of work.

15. During excavation operations, an on-site representative of the PERMITTEE may be required to perform the following activities with respect to their own facilities: physically expose or direct exposure of underground facilities, provide any necessary support to facilities and/or cover aerial facilities as deemed necessary to aid construction.
16. Pursuant to Section 337.401(2), Florida Statues, the permit shall require the permit holder to be responsible for damage resulting from the issuance of the permit. The Department may initiate injunctive proceedings as provided in s.120.69 to enforce provisions of this subsection or any rule or order issued or entered into pursuant thereto.
17. Pursuant to Section 337.402, Florida Statues, when any public road or publicly owned rail corridor is damaged or impaired in any way because of the installation, inspection, or repair of a utility located on such road or publicly owned rail corridor, the owner of the utility shall, at his or her own expense, restore the road or publicly owned rail corridor to its original condition before such damage. If the owner fails to make such restoration, the authority is authorized to do so and charge the cost thereof against the owner under the provisions of s. 337.404.
18. Special FDOT instructions:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

It is understood and agreed that commencement by the PERMITTEE is acknowledgment and acceptance of the binding nature of all the above listed permit conditions and special instructions.

19. By the below signature, the Permittee hereby represents that no change to the FDOT's standard Utility Permit form, as incorporated by reference into Rule 14-46.001, for this Utility Permit has been made which has not been previously called to the attention of the FDOT (and signified to by checking the appropriate box below) by a separate attached written document showing all changes and the written and dated approval of the FDOT Engineer. Are there attachments reflecting change/s to the standard form?
G NO G YES If Yes, _____ pages are attached.

PERMITTEE : _____ SIGNATURE: _____ DATE: _____
Name & Title of Authorized Permittee or Agent
(Typed or Printed Legibly)

APPROVED BY: _____ ISSUE DATE: _____
District Maintenance Engineer or Designee

****

UTILITY PERMIT FINAL INSPECTION CERTIFICATION

DATE: _____

DATE WORK STARTED: _____

DATE WORK COMPLETED: _____

INSPECTED BY: _____ (Permittee or Agent)

REMARKS (Brief summary of approved plans changes):

_____

_____

_____

_____

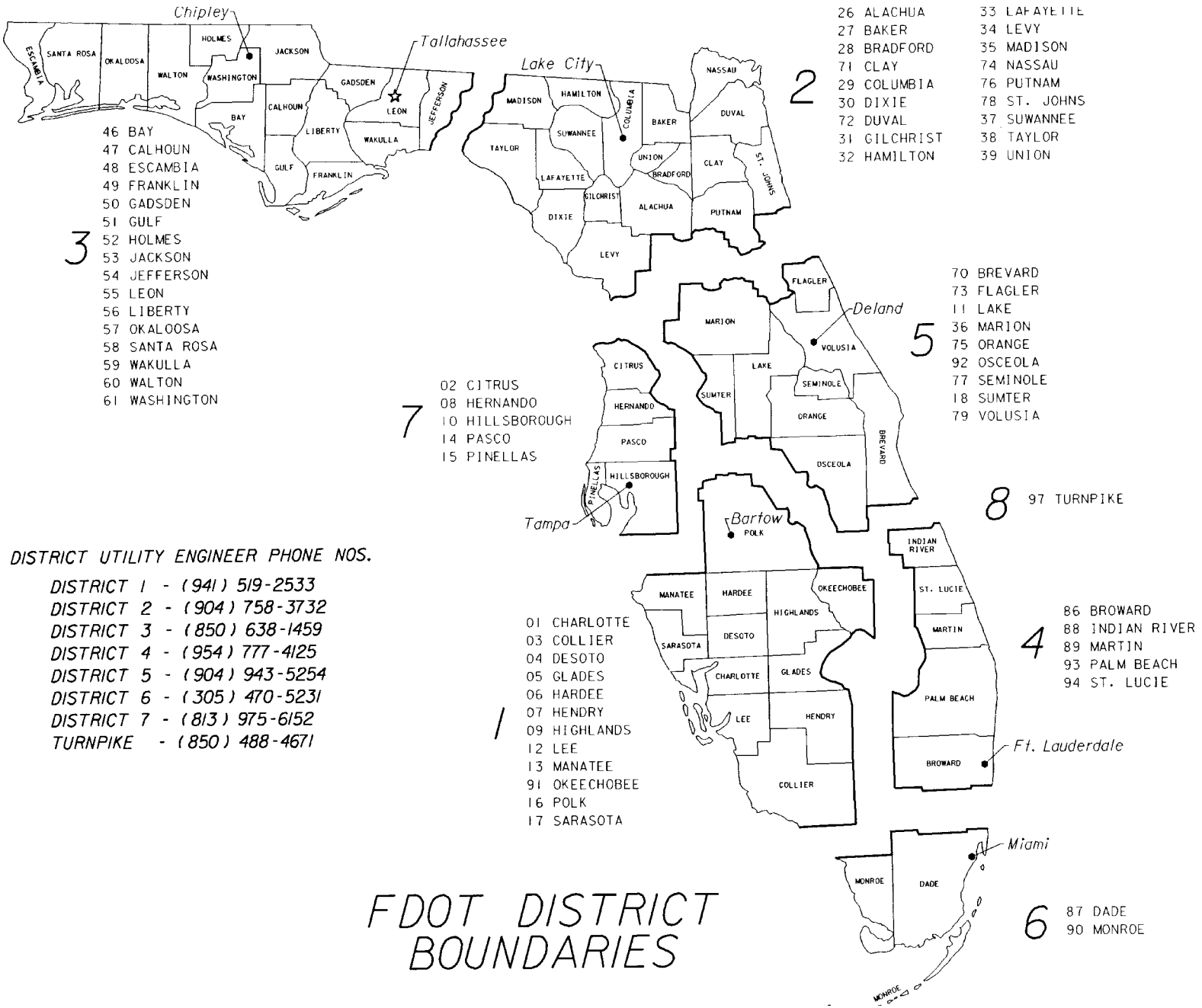
_____

CHANGE APPROVED BY: _____ DATE: _____
District Maintenance Engineer or Designee

I the undersigned PERMITTEE do hereby CERTIFY that the utility construction approved by the above numbered permit was inspected and installed in accordance with the approved plans made a part of this permit and in accordance with the FDOT's current Utility Accommodation Manual. All plan changes have been approved by the FDOT's Engineer and are attached to this permit. I also certify that the work area has been left in as good or better condition than when the work was begun.

PERMITTEE : _____ SIGNATURE: _____ DATE: _____
Name & Title of Authorized Permittee or Agent
(Typed or Printed Legibly)

CC: District Permit Office
Permittee



FDOT DISTRICT BOUNDARIES

DISTRICT UTILITY ENGINEER PHONE NOS.

DISTRICT 1 - (941) 519-2533
DISTRICT 2 - (904) 758-3732
DISTRICT 3 - (850) 638-1459
DISTRICT 4 - (954) 777-4125
DISTRICT 5 - (904) 943-5254
DISTRICT 6 - (305) 470-5231
DISTRICT 7 - (813) 975-6152
TURNPIKE - (850) 488-4671

REFERENCES

"The following references are incorporated into this Rule by reference. The extent to which the below items are made a part of this Rule through incorporation by reference is limited to the scope of application(s) specifically referenced within the text of the document."

1. English Version: Florida Department of Transportation. *Roadway and Traffic Design Standards,* January 1994 (including all revisions up through June 30,1998).
2. Metric Version: Florida Department of Transportation. *Roadway and Traffic Design Standards,* January 1998, (including all revisions up through December 31, 1998).
3. English Version: Florida Department of Transportation. *Standard Specifications for Road and Bridge Construction,* 1991.
4. Metric Version: Florida Department of Transportation. *Standard Specifications for Road and Bridge Construction*, 1999. (including all Supplemental Specifications up through January 1, 1999).
5. U.S. Department of Transportation, Federal Highway Administration. *Manual on Uniform Traffic Control Devices,* 1988, (including all revisions up through April 11, 1995).
6. The FDOT Topic No. 630-020-001-a, "TRANSPORTATION PRODUCT EVALUATION", July 15, 1998
7. 49 CFR, Part 192, Transportation of Natural And Other Gas by Pipeline.
8. 49 CFR, Part 195, Transportation of Hazardous Liquids by Pipeline.
9. National Electric Safety Code, C2-1997, Published By The Institute Of Electrical And Electronic Engineers.
10. 1995 ASTM STANDARD SPECIFICATION Designation A 123-89a for ZINC (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
11. 1995 ASTM STANDARD SPECIFICATION Designation A 153-82 forZinc Coating (Hot Dip) on Iron and Steel Hardware.
12. 1995 ASTM STANDARD SPECIFICATION Designation A 307-90 for Carbon Steel Bolts and Studs, 60 000 PSI Tensile Strength**.**
13. A Policy On Accommodation Of Utilities Within Freeway Right Of Way, Prepared by the American Association Of State Highway And Transportation Officials Standing Committee On Highways, February 1989.
14. US Department of Transportation Federal Highway Administration Program Guide Utility Adjustments and Accommodation on Federal-Aid Highway Projects, Third Edition, July 1995, Prepared by the Federal-Aid and Design Division, Office of Engineering**,** Federal Highway Administration, Publication No. FHWA-PD-95-029**.**
15. Roadside Design Guide, Prepared by the Task Force For Roadside Safety Of The Standing Committee On Design, Published By The American Association Of State Highway And Transportation Officials Standing Committee On Highways, January 1996.