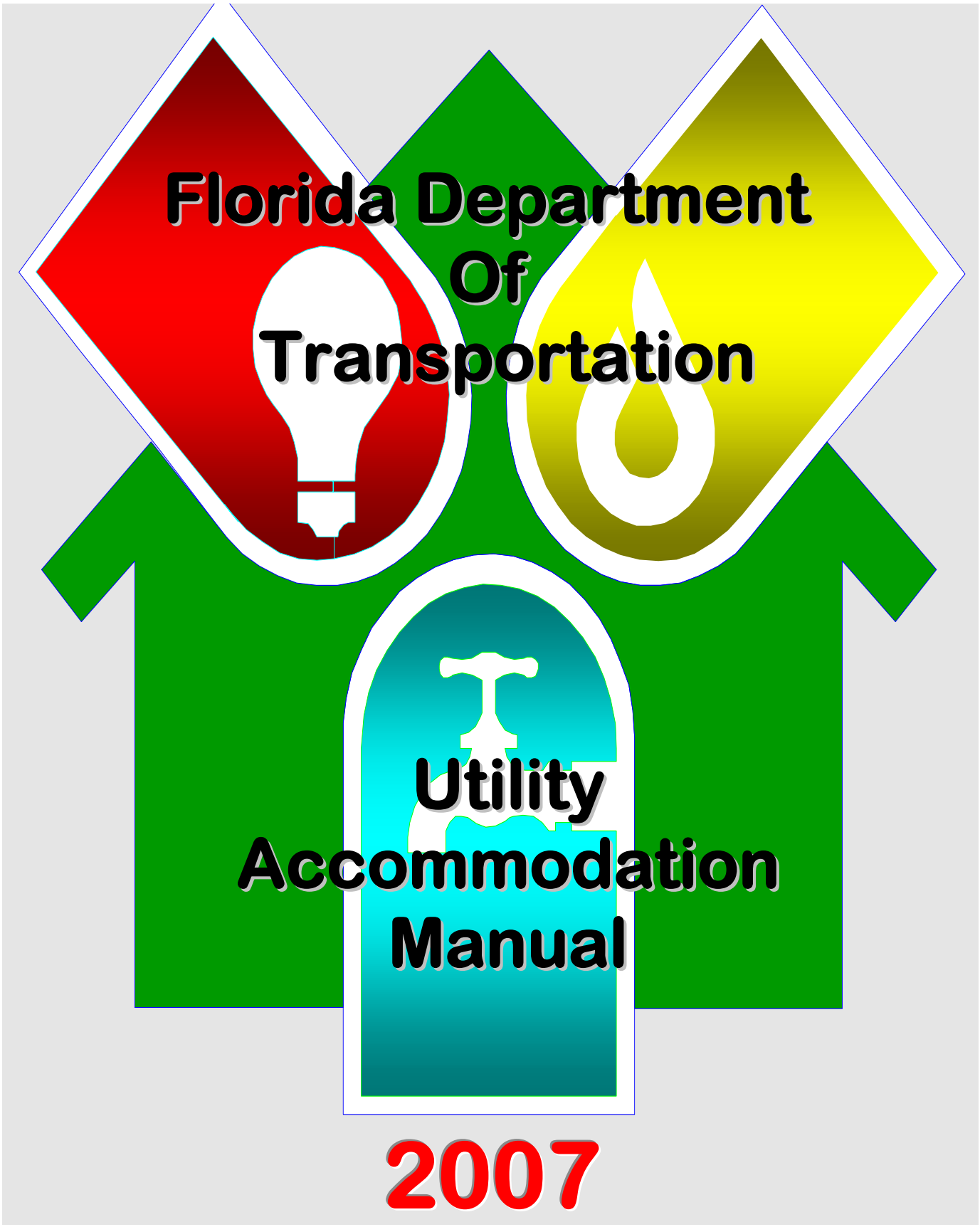
Florida Department
Of
Transportation
Utility
Accommodation
Manual
2007

PREFACE

The intent of the Utility Accommodation Manual is to provide direction, policy, criteria, and regulations for the accommodation of utilities within Florida Department of Transportation rights-of-way. The criteria in the Utility Accommodation Manual shall be applied through the exercise of sound engineering judgment.

Pursuant to **Section *334.044(1), Florida Statutes***, the Florida Department of Transportation 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. The ***Utility Accommodation 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 - 337.404***, ***Florida Statutes***. **Sections *337.401 - 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 Florida Department of Transportation with the specific authority to prescribe and enforce reasonable rules or regulations governing the placing and maintaining of utilities along, across, or on any State Transportation Facility. **Section *337.401(2), Florida Statutes***, provides that the Florida Department of Transportation may grant the use of the rights-of-way for a utility in accordance with Florida Department of Transportation rules or regulations and that no utility shall be installed, located, or relocated unless authorized by a written permit issued by the Florida Department of Transportation. **Section *337.401(2), Florida Statutes***, further provides that the permit holder is responsible for any damage resulting from the issuance of such permit. **Section *337.403(1), Florida Statutes***, provides that any utility found by the Florida Department of Transportation to be unreasonably interfering in any way with the convenient, safe, or continuous use, or the maintenance, improvement, extension, or expansion, of such public road or publicly owned rail corridor shall, upon 30 day's written notice to the Utility or its agent by the authority, , be removed or relocated by such Utility at its own expense except as provided in paragraphs (a), (b), and (c). ***Section 337.403(3), Florida Statutes,*** provides that whenever an order of the authority requires such removal or change in the location of any utility from the right-of-way of a public road or publicly owned rail corridor, and the owner thereof fails to remove or change the same at his or her own expense to conform to the order within the time stated in the notice, the authority shall proceed to cause the utility to be removed. The expense thereby incurred shall be paid out of any money available therefore, and such expense shall, except as provided in subsection (1), be charged against the owner and levied and collected and paid into the fund from which the expense of such relocation was paid.

Utilities Liaison – The Florida Department of Transportation provides sources of Liaison activities and information at the State and District level through several sources. These include direct contact, phone, email and web search. The Chief Liaison person on Utility Accommodation Standards and Criteria is the State Utility Engineer, located in Tallahassee, Florida. This person should be consulted on matters of statewide significance only except where otherwise noted in this Utility Accommodation Manual. For matters relating to Utility Permits, the District Maintenance Office is the appropriate contact point. Each Office has Utility Permit Engineers to address permitting related issues. For issues related to Florida Department of Transportation Construction of Design Projects in the Work Program, the District Utility Engineer is the appropriate contact.

The "MyFlorida.com" web site is available for accessing general information about Florida

Government services. Information related to the Florida Department of Transportation business, documents, and the ***Five Year Work Program*** can be found at http://www.dot.state.fl.us/. Utility specific information is found by selecting “Doing Business with FDOT” and then selecting ”Utilities Office”.

Recognizing that all utility owners serving the public have a common obligation to provide their services in a cost effective manner, the Florida Department of Transportation 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 Florida Department of Transportation, its consultants and contractors will consider the cost of utility work necessary for the proposed project. The Florida Department of Transportation will keep Utilities informed of future transportation projects by advertising its five year work plan and request the utilities to advise the Florida Department of Transportation of the location of existing and proposed structures within proposed project corridors. Exhibit L is a flowchart of the process for communicating general issues to the Utility Industry. This allows the Utility to track and interact on issues that may or may not result in a change in Florida Department of Transportation processes.

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INTRODUCTION

1.1 Purpose

The ***Utility Accommodation 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**.

1.2 Authority

Sections 337.401- 337.404, Florida Statutes
Rule 14-46.001, Florida Administrative Code

1.3 Scope

The ***Utility Accommodation Manual*** is used by the **Florida Department of Transportation** Utilities, Construction, Maintenance, and Design Offices for compliance review and issuing permits for utility installations as authorized under **Sections *337.401 - 337.403, Florida Statutes***, and ***Rule 14-46.001***, ***Florida Administrative Code***. Utility companies use the ***Utility Accommodation Manual*** as criteria for application for utility permits.

Since all utility owned facilities on **Florida Department of Transportation** rights-of-way must be authorized by permit, all utility design work, to the extent allowed by Florida law, must comply with the requirements herein. Therefore, District staff and consultants performing utility work on the **Florida Department of Transportation** rights-of-way must also adhere to the ***Utility Accommodation 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 **Florida Department of Transportation *Utility Accommodation Manual*** draws upon many resources as guidelines to establish standards for utility work or placement and reimbursement costs within the rights of way. For example, see the ***US Department of Transportation, Federal Highway Administration, Federal-Aid Policy Guide***. When a **Florida Department of Transportation** standard is found to be more stringent, the **Florida Department of Transportation** standard shall apply.

Disputes pertaining to utility accommodation that cannot be resolved with Senior Management in the District by mutual agreement shall be referred to the State Utility Engineer or designee for resolution or coordination. Disputes over exceptions to Non-Limited Access Policy or Criteria/Standards shall be referred to the State Roadway Design Engineer or designee for resolution. Disputes that can not be resolved in the District regarding utility accommodation across District boundaries, by intrastate utilities, shall be referred to the Chief Engineer or designee.

While the ***Utility Accommodation Manual*** governs matters concerning future location, and the manner and methods for the installation, adjustment, and maintenance of utilities on **Florida Department of Transportation** 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 above ground and underground facilities in **Florida Department of Transportation** 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****:*

(1) When transportation facility improvement projects necessitate relocation,
(2) 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.

To the extent such data is necessary to comply with the requirements of the ***Utility Accommodation Manual*** the **Florida Department of Transportation** will make crash history available upon request. Individual crash reports, if necessary, shall be obtained by the utility agency owner from the Florida Department of Highway Safety and Motor Vehicles Office.

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 **Florida Department of Transportation** 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 **Florida Department of Transportation** 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.

The ***Utility Accommodation Manual*** is also used to assess utility permit applications and to issue permits for work that are 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

The ***Utility Accommodation Manual*** is issued by the State Utilities Engineer and is furnished to **Florida Department of Transportation** personnel at no charge, upon request. For persons external to the **Florida Department of Transportation**, 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/

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

1.6 Revisions and Additions

Revisions and additions to the ***Utility Accommodation Manual*** and the utility permit form are developed in accordance with the ***Florida Administrative Procedures Act***. The ***Utility Accommodation Manual*** and utility permit form are incorporated by reference into ***Rule 14-46.001***, ***Florida Administrative Code*****.**

The State Utility Engineer will also coordinate the periodic review of the ***Utility Accommodation Manual*** by affected parties, including the Utility Industry, for continued need and updating. Users of the ***Utility Accommodation Manual*** may submit any suggestions for improvement or modifications at any time to the State Utilities Engineer: Suggestions must be submitted in writing either to the below postal or internet address.

State Utilities Engineer
Florida Department of Transportation
605 Suwannee Street
Mail Station 32
Tallahassee, FL 32399-0450
http://www.dot.state.fl.us/rddesign/utilities/files/utilities.htm

In order to keep the Utility Industry informed, the **Florida Department of Transportation** has created a Utility Liaison Process for **Florida Department of Transportation** Process Changes as follows:

See Exhibit "L" for a flow chart that is intended to summarily describe a process for providing a window of opportunity for the Utility Industry to access information and input on proposed changes by the **Florida Department of Transportation** that might impact them. It is specifically noted that most changes that are employed by the **Florida Department of Transportation** are the result of changes in national standards as adopted by government or agencies such as the Federal Highway Administration, American Association of State Highway Transportation Officials, Department of Environmental Protection, etc. Utilities are encouraged to become involved in reviewing and inputting regarding proposed changes by the National Associations and Professional Special Interest Groups before they are adopted by the organizations and the **Florida Department of Transportation** is required to comply.

The **Florida Department of Transportation** will require its various offices to publish

information via the Utility Web Site regarding proposed procedural changes, standards, criteria, or rules that may affect the Utility Industry. The purpose is to standardize utility notification and provide for early involvement on issues that are being considered. Changes that impact Utilities will be conducted in accordance with ***Florida Administrative Code, Chapter 120*** Rule Adoption Process.

1.7 Forms

The Utility Permit (***710-010-85, Utility Permit*** -See Exhibit J) may be obtained from the **Florida Department of Transportation** local Maintenance Office or the District Maintenance Office. All utility forms and agreements may be obtained through the District Utility Office or at the following internet address.

http://www.dot.state.fl.us/rddesign/utilities/files/utilities.htm

1.8 Training

No special training is required to use the ***Utility Accommodation Manual***. However, some functions addressed in the ***Utility Accommodation Manual*** require persons to be skilled or certified in a particular area of expertise. (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

2.1 Definitions

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.

Area Design Engineer: A **Florida Department of Transportation** Central Office employee responsible to the State Roadway Design Engineer who is assigned as Liaison to a District for technical assistance and coordination of engineering issues.

Adequate: The ability to satisfy a requirement of the **Florida Department of Transportation**.

As-Built Plans: Plans that depict the actual location of a facility after construction as determined by physical measurements in the horizontal and vertical plane.

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.

Business Day: Monday through Friday, excluding the following holidays: New Year's Day, Martin Luther King, Jr. Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day and the following Friday, Christmas Eve and Christmas Day. Any holiday that falls on a Sunday will be observed on the following Monday.

Clear Run-out Area: An area referred to by the American Association of State Highway Transportation Officials as additional clear zone space that is needed because a portion of the required clear zone falls on a non-recoverable slope.

Clear Zone: The unobstructed relatively flat area that is provided beyond the edge of the lane for errant vehicles. The American Association of State Highway Transportation Officials describes this as 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, or a clear run-out area. The desired width is dependent upon lane type, traffic volume and speed, and on the roadside geometry. See Tables 5.1.2.3. and 9.1.2.2. and Figure 5.1.2.3. Note: The previously mentioned "border area" is not the same as "border width." Also, see Horizontal Clearance.

Compensable Interest: Having established real 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, properly licensed in the State of Florida by the State, County, or City and is contracting with the **Florida Department of Transportation** or a Permittee to work, furnish materials, or work as a subcontractor for a prime contractor.

Control Zone: Areas in which it can be statistically shown that accidents are more likely to involve vehicle departure from the roadway and greater frequency of contact with above ground fixed objects. See Section 9.2 for details of the defining conditions.

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 law or local ordinance.

Criteria: Criteria, also referred to as a standard, is the **Florida Department of Transportation'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.

Design Build: A process whereby the **Florida Department of Transportation** can contract with a firm to accomplish designing and building a transportation facility, under a single contract as an integrated process. The contract may include all rights of way and utility functions normally performed by the **Florida Department of Transportation**.

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. Design speed was 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.

Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System: A document that contains standard detail drawings used in the design, construction, and maintenance of state highways (also known as the Design Standards or Standard Index).

Designating: The process of using a surface geophysical method or methods to interpret the presence of a subsurface utility and to mark its approximate horizontal position (its designation) on the ground surface. (Note: The word Locates is often used to identify this process.)

District: The local Florida Department of Transportation office.

District Utility Engineer or Administrator: The **Florida Department of Transportation** employee 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 the **Florida Department of Transportation** rights-of-way. An emergency situation requires the use of proper Maintenance of Traffic setup, when practical.

Encasement: A methodology which serves one of two purposes. It may be a technique used to provide added protection for either a utility facility or the surrounding environment, by surrounding the utility facility with concrete or a conduit designed to resist potential impacts or loading.

Erosion Control: Practices used to minimize soil loss from the **Florida Department of Transportation** 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: A **Florida Department of Transportation** authorization required when the design values and policy applied by the Utility are not in compliance with **Florida Department of Transportation** values or policy for any of the following elements:

- Vertical Clearance
- Horizontal Clearance
- Limited Access Rights of Way Use (Including Bikeways, Rails, Trails)
- Control Zone Use
- Mechanically Stabilized Earth or
- Proprietary Earth Walls

Extremely Aggressive: Environment: A corrosive environment for a structure defined by any of the following conditions:

- 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 indicates that a significant corrosion potential exists.

Fixed Object: Any above ground rigid non-frangible base object exceeding four (4) inches

in height above the surface of the immediate area.

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.

Inspector: An authorized representative of the **Florida Department of Transportation** Maintenance Office or Resident Construction Engineer.

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

Joint Use: When collocation occurs on or in a utility facility such as poles, ducts, or trenches, etc.

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: Florida Department of Transportation district representative responsible for design, review, and coordination of landscaping issues.

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

Limited Access Facility or Rights of way: A street or state 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, above, at the surface, or below the ground, or view by reason of the fact that the property abuts upon such limited access facility or for any other reason.

Locates: An information gathering process that may or may not involve a formal survey to identify and define the position of a utility, vertically and horizontally. (See also “Designating”)

Maintenance Engineer: A **Florida Department of Transportation** 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 **Florida Department of Transportation** Maintenance Engineer of the area in which the permitted utility work is to be performed).

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

Major Crossing: Pipe crossings eight (8) inches 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.

Major Utility Facilities: Those facilities that if required to relocate will: experience a significantly high dollar impact, or will impact other utilities or the **Florida Department of Transportation** in the same manner, or will potentially conflict with construction activities and scheduling.

Manhole, Hand Hole, Pull-Hole: An opening in an underground system by which access may be achieved for the purpose of making installations, inspections, repairs, connections, and tests.

Manual on Uniform Traffic Control Devices: The Federal Highway Administration ***Manual on Uniform Traffic Control Devices***, is incorporated by reference under Department of Transportation ***Rule 14-15.010, Florida Administrative Code***. This document is available for downloading from the Internet at the Federal Highway Administration's website listed as follows:

http://mutcd.fhwa.dot.gov/kno-millennium.htm.

Mechanically Stabilized Earth Wall (synonymous with Proprietary Earth Wall): An engineering process that allows vertical walls to be employed without constructing a foundation for supporting the load. This is accomplished by distributing the stress through lateral stabilizing materials such as straps or fabrics between layers of soil.

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

National Pollutant Discharge Elimination System: A program administered by the Florida Department of Environmental Protection pursuant to ***Section 403.0885, Florida Statutes*****,** to regulate point source discharges of storm water into surface waters of the State of Florida from certain municipal, industrial, and construction activities.

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

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

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 **Florida Department of Transportation** owned railroad corridor that contains one or more operating railroads.

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.

Permit: A limited use agreement that is issued by the **Florida Department of Transportation** to a Utility as required in ***Section 337.401(2), Florida Statutes,*** and subject to adjustment, removal or relocation of the affected utility upon a **Florida Department of Transportation** determination that the utility is unreasonably interfering in any way with the convenient, safe, or continuous use, or the maintenance, improvement, extension, or expansion, of the public road or publicly owned rail corridor.

Permit Application Package: Florida Department of Transportation Utilities Form No. 710-010-85 (See Exhibit J) and all support documentation. Refer to Chapter 3 of the ***Utility Accommodation Manual***.

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

Placed Out-of-Service (Deactivated): Wording used when a Permittee is allowed to leave its facilities in place and within the **Florida Department of Transportation'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 **Florida Department of Transportation**. All Placed Out of Service facilities are intended to remain out of service.

Qualified Welder: A person who has been tested and demonstrated their ability to produce welds that meet the requirements of ***49 Code of Federal Regulations, Part 192.227.***

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 **Florida Department of Transportation** employee in charge of **Florida Department of Transportation** construction projects.

Restricted Rights of Way 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: Work undertaken to preserve and extend the service life of an existing highway and enhance highway safety.

Rights-of-Way: Any part or access to a **Florida Department of 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 a **Florida Department of Transportation** Facility.

Routine Maintenance: The regular or normal care and upkeep of a facility.

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 Environmental Management Office responsible for coordination and review of Corridor Management Plans.

Standard Specifications for Road and Bridge Construction: A text document that provides specifications under which Florida roads and bridges will be constructed, inspected and paid for (also referred to as the ***Standard Specifications***).

Standards: A standard, also referred to as criteria, is the **Florida Department of Transportation's** elected 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 **Florida Department of Transportation** policy and procedures for utility accommodation on **Florida Department of Transportation** rights-of-way.

Subsurface Utility Engineering: A branch of engineering practice that involves managing certain risks associated with utility mapping at appropriate quality levels, utility coordination, utility relocation, design and coordination, utility condition assessment, communication of utility data to concerned parties, utility relocation cost estimates, implementation of utility accommodation policies, and utility design.

Traffic Control Plan: 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.

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

Transportation Facility: Defined by ***Section 334.03(31), Florida Statutes***, 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 / Traffic Lane: The designated widths of roadway pavement, exclusive of shoulders and marked bicycle lanes, marked to separate opposing traffic or vehicles traveling in the same direction. These lanes include through travel lanes, auxiliary lanes, turn lanes, weaving, passing, and climbing lanes. They provide space for passenger cars, trucks, buses, recreational vehicles and, in some cases, bicycles.

Travel Lane: The designated widths of roadway pavement marked to carry through traffic and to separate it from opposing traffic or traffic occupying other traffic lanes. Generally, travel lanes equate to the basic number of lanes for a facility.

Utility 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.

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 Utility Agency/Owner 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.

Utility Work by Highway Contractor: Work accomplished in compliance with ***Section 337.403(1)(b), Florida Statutes***. This work was historically referred to as a JPA or Joint Participation Agreement.

Vegetation: All trees, shrubs, vines, legumes, grasses, or other plant material.

2.2 Acronyms

ADE: Area Design Engineer

ADA: The Americans with Disabilities Act of 1990

ASTM: American Society of Testing and Materials

CADD: Computer Aided Drafting and Design

C.F.R.: Code of Federal Regulation

DEP: Florida Department of Environmental Protection

DUE: District Utility Engineer or Administrator

EMO: The **Florida Department of Transportation** Environmental Management Office: Formerly called the Project Development and Environment Office (PD&E)

F.A.C.: ***Florida Administrative Code***

FDEP: Federal Department of Environmental Protection

FDOT: Florida Department of Transportation

FHWA: Federal Highway Administration

FIHS: Florida Intrastate Highway System

F.S.: ***Florida Statutes***

HDD: Horizontal Directional Drill (also called Directional Bore)

LA or LA R/W: Limited Access or Limited Access Rights of Way

MOT: Maintenance of Traffic

MUTCD: Manual on Uniform Traffic Control Devices

MSE: Mechanically Stabilized Earth Wall (Also synonymous with Proprietary Earth Wall)

NESC: National Electrical Safety Code

NPDES: National Pollutant Discharge Elimination System

OSHA: Occupation, Safety, and Health Administration

PD&E: This is the old **Florida Department of Transportation** terminology still found in some publications referring to the **Florida Department of Transportation** Project Development and Environment Office. This Office has been renamed the Environmental Management Office or EMO. It also refers to the Project Development and Environment phase of the plans production process.

RRR: Resurfacing, Restoration, and Rehabilitation

R/W: Rights-of-Way

SUE: Subsurface Utility Engineering

TCP: Traffic Control Plan

UAM: ***Utility Accommodation Manual***

UAO: Utility Agency/Owner

U.S.C.: United States Code

UWHC: Utility Work by Highway Contractor

Chapter 3
UTILITY PERMIT

3.1 Utility Permit

A Utility Permit Application (see Exhibit J) must be submitted by the, UAO per ***Section 337.401, F.S.*** An engineer or contractor may prepare and process a permit application for a utility owner, but shall not be identified as the Permittee. The permittee shall be responsible for ensuring its engineer or contractor complies with the provisions of the ***UAM***.

A permit must be approved or authorized by the **FDOT** before any utility is installed, relocated, or any facility placed out of service (deactivated), that is reactivated on the **FDOT** R/W, whether it is for aerial or underground installations or attachment onto bridge structures, except as noted in the ***UAM***. When ownership of an existing utility facility changes, the new owner must provide an affidavit acknowledging transfer of ownership of such facilities and describing the boundaries. The new UAO acknowledges that the utility facility continues to be bound by the conditions of the permit when it was originally permitted.

Permit Form 710-010-85, (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 the ***UAM***. No advance permit approval is required. However, permits for pavement cuts shall be submitted within five (5) business days after the repairs are completed. This does not limit any permit requirements of 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**, EMO in Tallahassee to determine the disposition thereof. No work will resume until direction is given by the approving Maintenance Engineer.

Submittal of a combination of an approved "***Utility Work Schedule***", ***Form No. 710-010-05***, and an authorized signed **FDOT** utility agreement may be deemed equivalent to a permit. The intent is to eliminate unnecessary duplication of processes. Completion of the standard permit process in such cases is not required except that the above two documents shall have attached to them ***Permit Form No. 710-010-85*** completed through the signature section of the Permittee including the date. This is necessary to obtain a permit number and to generally identify the work area. All other permit related provisions or information is defined in the work schedule or utility agreement. This section does not remove the Utility's obligation to comply with any and all provisions contained within this rule except as modified by the above submitted and approved agreement, nor does it preclude the requirement to

supply whatever engineering justification or documentation is necessary for design approval, including any exception that may be required.

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 criteria in the bullets listed in Section 3.2.1:

- Schematic plans of the proposed installation (not necessarily to scale) showing the beginning and ending project limits.
- The horizontal offset from a well-defined feature of the Transportation Facility (to be determined by the permit engineer) to the proposed utility installation.
- The R/W limits and limited access line.
- As applicable, pavement/rail width and distance from edge of pavement/rails to utility.
- The roadway/railroad section and milepost numbers, station numbers and bridge number (if applicable).
- 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).
- All utility poles or other above ground facilities and other pertinent details. With the exception of utility or single pole appurtenances mounted fifteen (15) feet or higher above the ground, appurtenances larger than eight (8) cubic feet must have their location and size shown on the permit.
- One or more typical cross sections to adequately reflect the underground location of the utility facility.
- All known 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.
- If above ground or underground facilities involve only one side of the R/W, then only involved utilities on that side of the R/W need to be shown on the permit drawing.
- In all cases, the Permittee shall list all known R/W users in the installation area on the permit form, and notify each of them by copy of the permit drawing, whether they are known to be impacted or not.

- The minimum vertical clearance above or below the pavement shall be shown.
- The approximate distance and direction to either the nearest town, major road intersection, bridges, or railroad crossings.
- 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.
- A simple key map showing the location of this proposed facility should be included.
- When the proposed utility work requires MOT, the permit application package must include a TCP. See Chapter 8 for specific criteria.
- 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) by 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 Any person may submit a permit application on behalf of another person or corporation. Only the owner may be listed as the permittee. Any person submitting a permit application on behalf of another must have the legal authority to do so and be a duly appointed representative.

3.2.3.1 When the Permittee is not a corporation and is submitting a permit application for itself, the owner's signature must be on the permit application. All 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.

3.2.3.2 When a permittee is not a corporation and appoints a representative to submit a permit application on their behalf, the representative shall attach to the permit application a notarized statement that the representative has the authority to do so. The representative shall sign the "Submitted for" space on the permit application. All 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.

3.2.3.3 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 **FDOT** for that corporation, must appear on the permit application. All 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 two (2) originals and two (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 the ***UAM***. Those applications that 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 Chief 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 thirty (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 ***Section 120.60, F.S***., and requirements found within the ***UAM***. Permits will be approved and issued if all requirements of the ***UAM*** are met.

3.3.4 For installations in **FDOT** R/W 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 its 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 within thirty (30) days 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 additional information is needed.

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

3.3.5 For projects that 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 additional information is needed.

3.3.6 All permit applications involving scenic enhancement areas are to be reviewed and approved by the 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 State Materials Engineer and 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 applicant shall notify, in writing, all known involved utility agencies using the R/W 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 applicant'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 ten (10) days of the applicant's notification letter. Such objections must be specifically defined.

3.3.10 All permit applications for R/W subject to easements from the 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 railroad corridors and LA R/W require "Exceptions" for longitudinal installations but otherwise will be handled the same way as other utility permits and subject to prior real property rights.

For the South Florida Rail Corridor use criteria in the bullets listed for Section 3.3.11:

- The Standard Permit Application, and the pertinent Standard Railroad Application Package shall become part of the total package. All Permittees must follow the instructions on the Application Package.

- The local Maintenance Engineer or designee will forward four (4) copies of the package to the CSX Railroad for its concurrence and/or approval.

- No permit will be approved by CSX without receipt of the appropriate processing fee. Per agreement with CSX, the sole responsibility of the **FDOT** is to forward the application package and processing fee when supplied by the Permittee. It is CSX's

responsibility to collect the fee from the Permittee if not included in the application package.

- After receipt of the approved four (4) packages from the CSX and the **FDOT** permit approval, the local Maintenance Engineer or designee will distribute the permit as appropriate.

Two (2) copies and one (1) 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 ***Permit Form 710-010-85*** and file it in the District Permit Engineer's Office, with a copy sent to the Permittee.

3.3.13 The **FDOT** requires the UAO to comply with the permitting requirements of other governmental entities where otherwise required by law. One example is the DEP which is the NPDES storm water permitting authority and is responsible for promulgating rules and issuing permits, managing and reviewing permit applications, and performing compliance and enforcement activities. This program requires a permit (separate from any **FDOT** Permit) for storm water discharge into waters of the State that disturbs one (1) acre or more of land. Furthermore the NPDES permitting program is separate from the State's storm water/environmental resource permitting programs found under ***Part IV, Chapter 373, F.S., and Chapter 62-25, F.A.C.,*** and local storm water/water quality programs, which have their own regulations and permitting requirements.

3.4 Signing & Sealing Utility Plans

The following applies:

3.4.1 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 licensed, Florida professional engineer. See Chapter 8.

3.4.2 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.

3.4.3 Utility Work by Highway Contractor (UWHC) Documents for UWHC prepared for Utilities by their own engineers (exempt under ***Chapter 471***, ***F.S***.) do not require signing and sealing. However, documents prepared by an engineering consultant for a Utility must be signed and

sealed.

3.5 Installations Not Requiring Permits

3.5.1 Permits are not required for placing new poles within an existing permitted facility pole line unless noted otherwise in the ***UAM***. 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 fourteen (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 of **FDOT** in seeking compliance.

3.5.2 A permit is not required for replacement of an individual pole when the diameter or width does not exceed an additional six (6) inches of the original pole.

3.5.3 Permits are not required for service drops or span guys emanating from or attached to poles located within the R/W and properly covered by an existing permit, except for rail corridors and LA R/W. It is intended that Rail Corridors and LA R/W shall not be used for utility distribution services.

3.5.4 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 in accordance with ***Chapter 556, F.S.***

3.5.5 Permits are not required for temporary utility work approved by the **FDOT** Resident/Project Engineer during **FDOT** construction projects.

3.5.6 Permits are not required for maintenance on or replacement of existing aerial facilities, or inserting a product into an existing conduit or pipeline permitted by the **UAO**, provided there is no pavement cutting, and any duct work can be done within the permitted time frame.

The Permittee shall give a minimum of forty eight (48) hours advance notice, and identify limits of work to the local **FDOT** Maintenance Engineer. When a permit is required due to pavement cuts or scheduling issues, a new justification is not required. New permit requirement support documentation shall be limited to maintenance of traffic and safety issues, details of what is to be installed in the pipeline or conduit, schedule to accomplish the work, and a copy of any separate agency environmental permit, if required.

3.6 Installations Requiring Permits

3.6.1. Permits are required for all underground installations and all overhead lines and crossings,

except where noted in Section 3.5.

3.6.2 Permits are required for all additional facilities using criteria listed in the bullets in Section 3.6.2:

- It is necessary to place a pole within the R/W where there is not an existing pole line.
- It is necessary to place a pole adjacent to a buried cable where the existing permit does not include a pole line.
- 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 R/W 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.
- Where a pole replacement exceeds the criteria of Section 3.5.2. If the horizontal clearance is reduced or the pole has been hit more than two (2) times in any three (3) consecutive years of the last five (5) years, it must be evaluated for relocation.

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

3.6.4 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.

3.6.5 A permit is required if a new pole is to be set within the R/W to accommodate a private or area light. A permit is also required for the installation of a private or area light on an existing pole within the R/W where the light pattern which shall conform to **FDOT** Highway Lighting Standards, is to be directed toward the pavement.

3.6.6 Permits are required when existing facilities are to be relocated permanently to another location within the R/W, whether caused by a betterment program for the R/W user, or by **FDOT** construction.

3.6.7 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. 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.

3.6 .8 Permits are required to reline any utility facility.

3.6.9 Permits are required if any pavement is to be cut, including driveways or sidewalks on **FDOT** R/W.

3.6.10 Permits are required for any pipe reconstruction, replacement, or restoration procedure that has a potential to cause damage such as displacement or heaving.

3.7 Additional Permit Requirements

3.7.1 The Permittee shall give a minimum of forty eight (48) hours advance notice to the approving local Maintenance Engineer prior to any construction or excavation, except in emergency situations.

For any excavation, construction, maintenance, or support activities performed by or on the behalf of the **FDOT**, within its R/W, the permittee may be required by the **FDOT** or its agents to perform the following activities with respect to a Permittee's facilities: physically expose or direct the exposure of underground facilities, provide any necessary support to facilities and/or cover, de-energize or alter aerial facilities as deemed necessary for protection and safety.

3.7.2 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, F.A.C***.

3.7.3 The Permittee must comply with ***Section 335.15***, ***F.S.***, requiring notification of the 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 two (2) hours, the party performing such work shall give notice to the local law enforcement agency, 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. This ***UAM*** Rule requires additionally, that the local Maintenance Engineer be notified, except in emergencies, a minimum of forty eight (48) hours in advance before closure to allow sufficient time for public service announcements and local agency response.

When utility work requires the use of temporary barriers or traffic channelizing devices that prevents a permitted over dimensional vehicle to travel through the work site on the pavement or shoulder, the Utility or its contractor shall be required to temporarily move such barriers or devices in an expedient manner to facilitate passage. If the Utility or its contractor cannot temporarily or expediently move the barriers or devices due to impracticality or work site constraints, the Utility must notify the local Maintenance Engineer seven (7) days prior to setup to prevent the **FDOT's** issuance of over dimensional vehicle permits through the site.

Failure to provide such seven (7) day notification will result in the Utility's having to relocate the temporary barriers, at the Utility's expense, to permit passage of the oversize vehicle.

3.7.4 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.

3.7.5 All new or replaced underground facilities within the R/W shall be made electronically detectable using techniques available in the Industry. Where as-builts are required in accordance with the ***UAM*** or ***FDOT Standard Specifications for Road and Bridge Construction 555, 556, or 557***, an as-built plan of the utility facility location including a depth tabulation (when plots or elevations are not provided) shall be furnished at the time of the certification of completion of the project for which a permit is given.

3.7.6 Minimum horizontal offset or vertical clearance dimensions shall be the greater of that required by either the ***UAM***, Rule Chapter 14-57, ***F.A.C.*** 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 twenty four (24) feet three (3) inches 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 foot of track raise, and is based on the American Railway Engineering Association recommended load gauge of twenty one (21) feet.

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 one hundred (100) feet but not less than twenty five (25) feet 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.

3.7.7 When the Utility or contractor installs underground structures exceeding eighty (80) cubic feet that will be used as manholes, or service points, the Permittee must attach to the permit a manufacturer's or builder's certification that the structure and all appurtenances to be installed meet or exceed the requirements of H.S. 20 Military load as shown in the Bridge Inspector's Reference Manual and incorporated into the ***Florida Administrative Code*** by reference in Rule Chapter 14-48.001.

3.7.8 All horizontal directional bores (reamer size) larger than six (6) inches must be approved by the State Utility Engineer or designee. However, the District Maintenance or Construction Office engineer may approve larger bores that comply with the conditions listed in the bulleted items in Section 3.7.8. If the Permittee can comply with the conditions contained in the bulleted items listed in Section 3.7.8, review and approval by the State Utility Engineer is not required. The **FDOT** prefers bores to be as shallow as practical but depth can only be determined by obtaining the necessary support information. Compliance with the conditions contained in the bulleted items in Section 3.7.8 are optional for the Utility in lieu of obtaining support soils and water table information, and does not automatically obligate the Utility to install facilities at ten (10) diameters.

- The utility bore depth will equal or exceed ten (10) times the bore size when the utility will be installed under **FDOT** pavement, or

- When installations are outside of the pavement area, the offset parallel to the pavement must be at least three and one half (3.5) times the bore size, or

- The soils blow count is at least thirty (30) blows per foot based on standard penetration tests in the area of installation.

- New bore installations must maintain at least three and one half (3.5) times the bore size clearance from vitrified clay sanitary pipe and any gas lines.

- The permit must demonstrate the location (vertically and horizontally) and type of all utilities within at least three and one half (3.5) times the bore size in the immediate vicinity of the proposed work of the Permittee.

3.7.9 If compliance with the conditions contained in 3.7.8 cannot be acheived, copies of support information listed in the bulleted items in Section 3.7.9 must be supplied to the District Maintenance or Construction Office Engineer if work is within the limits of an **FDOT** construction project, for review and approval by the State Utility Engineer, or designee, before a permit will be issued.

- Soils property, water table depth, and blow count information in the vicinity of the boring activity.

- The depth of soils information must extend to a depth equal to the lesser of: ten (10) times the bore (reamer diameter); two (2) feet into strata providing a blow count of thirty (30) or more; two (2) feet below the normal water table, but not less than eight (8) feet. For example, if a blow count of thirty (30) is reached at a depth of four (4) feet then the soils data need only proceed to a depth of eight (8) feet. See Exhibit “M” for guidance in approximating the minimum depth under the pavement that HDD should be placed. Factors such as clearance from other utilities, future construction considerations, and equipment setup limitations will also be taken into consideration in setting the final minimum depth.

- As an option to acquiring Geotech Services, the Permittee may use **FDOT** soils data from **FDOT** construction plans when available. It is the Permittee's responsibility to acquire this information, and not the **FDOT** to do the research.

- A copy of the regular required permit documentation.

3.7.10 If during the plans design or construction process it is determined that a domestic water supply line must pass through a storm drain structure, it must be shown on the design or construction plans and submitted to the FDEP Administrator for Drinking Water in Tallahassee for review and comment. Standard Index 307 provides accepted methods for addressing conflicts when and where they cannot be reasonably avoided. To be submitted along with the plans shall be a justification describing inordinate cost and the impracticality of avoidance. If identified, properly justified, and accomplished in accordance with Index 307, approval is granted. Upon request, the Utility must provide support data on the cost of relocation or adjustment to the **FDOT** for submittal to the FDEP.

3.8 Permit Non-compliance

When the Permittee fails to complete all requirements contained within the ***UAM*** or features of the installation as specified in the permit, and the **FDOT** determines that such noncompliance is unreasonably interfering in any way with the convenient, safe, or continuous use, or the maintenance, improvement, extension, or expansion, of the public road or publicly owned rail corridor, the following course of action shall be implemented in accordance with Sections 3.8.1 through 3.8.2.

3.8.1 **For non-FDOT construction permit non-compliance issues:** The approving Maintenance Engineer shall give written notice, by Certified Mail with return receipt, to the utility or its agent advising of the specific deficiencies and/or violations and requesting compliance with the permit provisions within 30 days per F.S. 337.403

For FDOT construction permit non-compliance issues: The District Design or Utility Office shall give written notice, by Certified Mail with return receipt, to the utility or its agent advising of the specific deficiencies and/or violations and requesting compliance with the permit provisions within 30 days per F.S. 337.403(1) except as provided for in paragraphs (a), (b), and (c).

3.8.2 If deficiencies and/or violations have not been corrected within thirty (30) days, a second notification shall be sent by Certified Mail with return receipt. This second notice shall advise the Permittee of the **FDOT's** intent to extend the time allowed to achieve compliance or take action pursuant to F.S. 337.403(3).

The **FDOT** shall document all acts of non-compliance that have occurred with regard to each permit, including failure to respond to notifications of non-compliance. 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 4
APPLICATION OF CRITERIA, STANDARDS, SPECIFICATIONS, AND POLICY

4.1 Application Of Criteria

The State of Florida has adopted criteria from various sources such as AASHTO, ASTM, FHWA, FDEP, and the DEP. Some of these agencies have jurisdiction over the **FDOT** in specific areas and have rule making authority. Any reference to criteria that the **FDOT** is constrained to comply with by rule, must of necessity change as other agencies change their rule. It is the responsibility of the Utility to comply with the most up to date criteria as is required of the **FDOT**. As the **FDOT** is made aware of changes, this information will be communicated through liaison activities identified herein.

4.2 Application Of Standards

The ***FDOT Standard Indexes*** are intended to be used on **FDOT** R/W. In cases where the **FDOT** construction extends on to city, county, or private R/W, the property owner has the option of applying its own standard. The **FDOT** construction plans or permit shall incorporate the standard to be applied.

Users of the ***FDOT Standard Indexes, Series 600*** for MOT activities should be aware they contain information specific to the federal and state guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on the State Highway System. Certain requirements in these Indexes are based on the high volume nature of state highways. For highways, roads and streets off the State Highway System, the local agency (city/county) having jurisdiction may adopt requirements based on the minimum requirements provided in the ***MUTCD***, ***Part 6.***

4.3 Application Of Specifications

The ***FDOT Standard Specifications for Road and Bridge Construction*** as modified by Appendix A, are intended to convey to a contractor or permittee working on **FDOT** projects or on the **FDOT** R/W, what contractual relationship exists, and define the standard of care, manner of work, and deliverables. They were written assuming a contractual relationship exists with the **FDOT**. When a Utility conducts work on the **FDOT** R/W it is expected that the same provisions of standard of care, manner of work, and deliverables will be applied, except as amended by the ***UAM***. Any provisions relative to contractual relationship in the Standard Specifications do not apply. The ***UAM*** identifies either in the text or exhibits, or referenced standard indexes, what standard specifications apply to the Utility, except when it enters into a contractual relationship. Contractual relationships may exist in the form of a Joint Participation Agreement for work performed by the **FDOT** contractor per ***Section 337.403(1)(b), F.S.,*** or when a Utility performs advance relocation work itself or contracts

that work out in accordance with ***Section 337.403(1)(c), F.S..*** In all cases the applicable standards or specification will be controlled by the appropriate agreement.

4. 4 Application of Criteria, Standards, Specifications When A Utility Damages State Infrastructure

The ***UAM*** contains specific references to criteria, standards, and specifications that must be complied with to obtain a permit.

In the Reference Section, at the end of the ***UAM***, the specific references are not listed individually. Only the parent document in which the specific references are found is listed in the Reference Section. This shall not be interpreted as incorporating the entire document into the rule. This also serves to inform the UAO what criteria, standard, and specification the **FDOT** uses in work which is not typically accomplished by the UAO in location and installation of infrastructure.

Section 337.402, F. S., states, "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***."

4. 5 Application of Policy

4.5.1 **EXEMPT PUBLIC DOCUMENTS** - Certain documents may be exempt from public disclosure pursuant to ***Section 119.07(3), Florida Statutes***. Anyone requesting a document that meets the conditions referenced in the statute may be required to sign a release form (Exhibit "N").

4.5.2 LIAISON – The primary source of **FDOT** communication with the Utility Industry is the Utility Web site at http://www.dot.state.fl.us/rddesign/utilities/files/utilities.htm . Exhibit L is intended to summarily describe a process for providing a window of opportunity for the Utility Industry to access information and input on proposed changes by the **FDOT**, that might impact them. It does not detail all processes. It is specifically noted that many, changes, if not most, are the result of changes in National Standards as adopted by Government or Agencies such as the FHWA, AASHTO, DEP, etc. The most effective approach is to become involved in reviewing and inputting on proposed changes by the National Associations and Professional Special Interest Groups. Involvement and attempting to bring about change through the **FDOT** process may be too late. The **FDOT** may be obligated to adopt other agency standards by law without having opportunity to effect further change. In addition, Utilities are encouraged to communicate with other Utilities through local industry groups to assure issues are dealt with on a consensus basis. This will allow the **FDOT** to deal with issues more appropriately and with less impact. The **FDOT** will comply with ***Florida Statute 120.54***, Rulemaking.

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 the ***UAM***. 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. To facilitate management of the R/W resources and minimize construction conflicts, joint use of utility facilities is encouraged when accommodation can be achieved within or on existing ducts or poles, provided accommodation is compatible. An exception to joint use may be allowed based on the Permittee providing an engineering benefit cost study with a 2:1 ratio.

Roadway designers use design speed as a control for designing individual roadway elements throughout a project for reasons of cost effectiveness and achieving maximum safety. After a design is complete, a uniform posted speed is established for areas along the roadway that is both reasonable and fits within the bounds of all the design elements. It is important that design speed be used to determine clear zone and horizontal clearance requirements in lieu of the posted speed whenever possible. Use of the posted speed to set clearances will not provide the desired safety factor. However, it may not be possible to find the records that document the design speed. In such cases, and only in such cases, it is acceptable to use the posted speed. The source for determining the design speed for all state roadways is the District Design Engineer's Office.

5.1.2 In situations where underground and above ground 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 R/W limits as practical, to provide as much clear zone or horizontal clearance as practical. New longitudinal underground utility installations shall be discouraged within three (3) feet of the R/W to allow space for above ground facilities that must comply with clear zone and horizontal clearance criteria. In cases where no other place exists to place an underground facility, placement within three (3) feet of the R/W is acceptable.

Clear Zone criteria have been developed and are found in Table 5.1.2.3. As shown in Figure 5.1.2.3, additional Clear Zone width is provided where non-recoverable terrain is within the Clear Zone value shown in Table 5.1.2.3. Also, Clear Zones may be widened based on crash history. 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** R/W, a joint-use arrangement must be pursued by the utility agencies.

Only single pole lines shall be permitted on each side of **FDOT's** R/W. Exceptions may be granted pursuant to Chapter 13 of the ***UAM***.

In those situations where a single UAO proposes to install a pole line on both sides of the R/W, both pole lines must be available for joint use in order to accommodate other above

ground UAO facilities.

The Americans with Disabilities Act of 1990 (ADA) established minimum criteria to allow unobstructed access or passage by a disabled person using a wheelchair or other personal transportation device. Generally, the minimum clear pathway width requirement is thirty-six (36) inches. However, a thirty two (32) inch minimum clear width is allowed for a pathway length not exceeding twenty four (24) inches. See ***28 CFR, Part 36***, Appendix A, Fig 1. In the case of curbing adjacent to a sidewalk that constitutes a pathway, the curb shall not be considered part of the thirty two (32) inch dimension. No exceptions for non-compliance with the ADA criteria are given.

Table 5.1.2.1 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): **Twenty (20) feet from the travel lane, fourteen (14) feet from auxiliary lane (may be clear zone width when clear zone is less than twenty (20) feet).**
Urban (Curb and Gutter): **From right of way line to four (4) feet back of face of curb (may be two and one half (2.5) feet 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 thirty two (32) inches is provided per ADA requirements. (Sidewalk width is measured exclusive of the curb width.)**
HIGH MAST LIGHTING - Outside of the clear zone unless shielded.

Table 5.1.2.2 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.**
All roadways with flush shoulders regardless of design speed and roadways with curb or curb and gutter with design speeds greater than forty five (45) mph: **As close as practical to the R/W line* or four (4) feet behind the back of the barriers that have been justified for other reasons.** 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 roadways with design speeds of forty five (45) mph or less: **As close as practical to the R/W line.* If a minimum distance of four (4) feet 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 thirty-two (32) inches is provided. (Sidewalk width is measured exclusive of curb width.)**
*** "As close as practical to the R/W 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.** **** Less than four (4) feet may be approved by exception.**

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) Note: Design Speed is shown in the table. However, Posted Speed may be used as the default criteria for areas where the design speed is not published. Design Speed shall be used when available. See Section 5.1.1.

CLEAR ZONE WIDTH (FEET)				
DESIGN SPEED Mph	≥1500 AADT*		<1500 AADT*	
	TRAVEL LANES & MULTI-LANE RAMPS	AUXILIARY LANES & 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 twenty (20) years projected annual average daily traffic.

Clear Zones must be adjusted for the effects of shoulder slopes steeper than 1:4. Adjustments due to shoulder slope are contained in Figure 5.1.2.3.

Clear Zone Widths are measured from the edge of the lane.

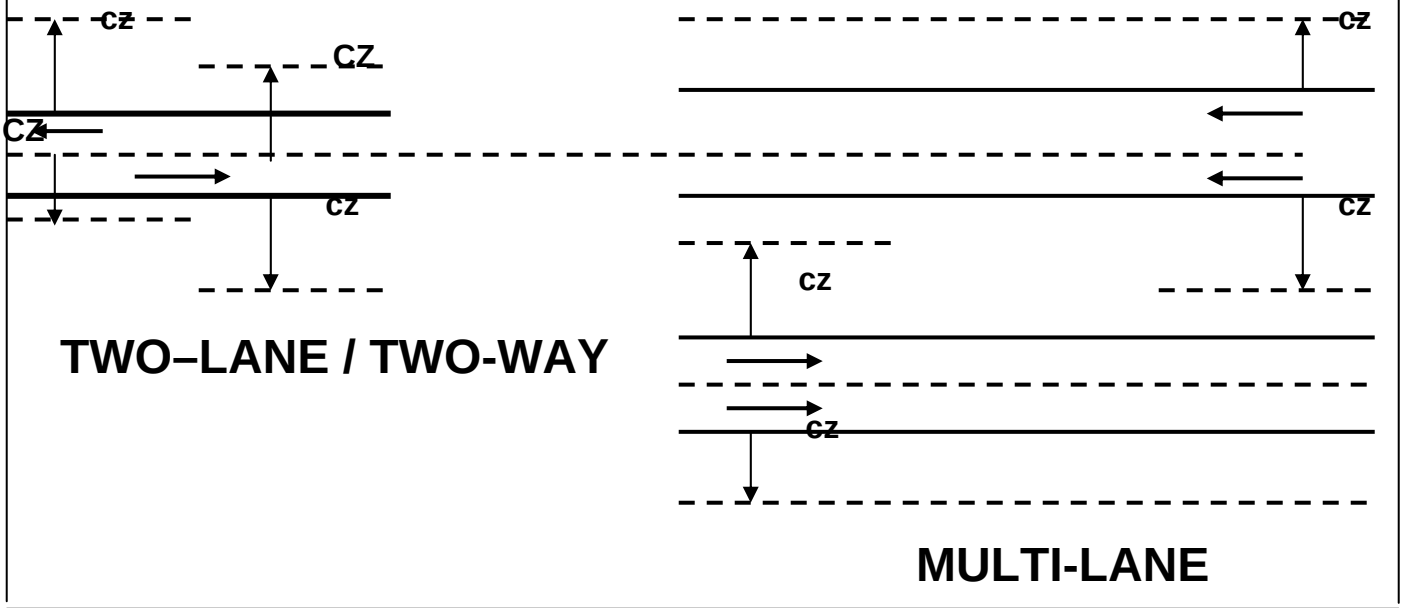


Table 5.1.2.4 Horizontal Clearance to Other Above Ground Fixed Objects

Minimum Horizontal Clearance to other above ground fixed objects:

Rural and Urban Flush Shoulders:
Outside the clear zone.

Urban Curb or Curb and Gutter:
Four (4) feet back from face of curb. May be two and one half (2.5) feet back from face of curb when all other alternatives are deemed impractical.

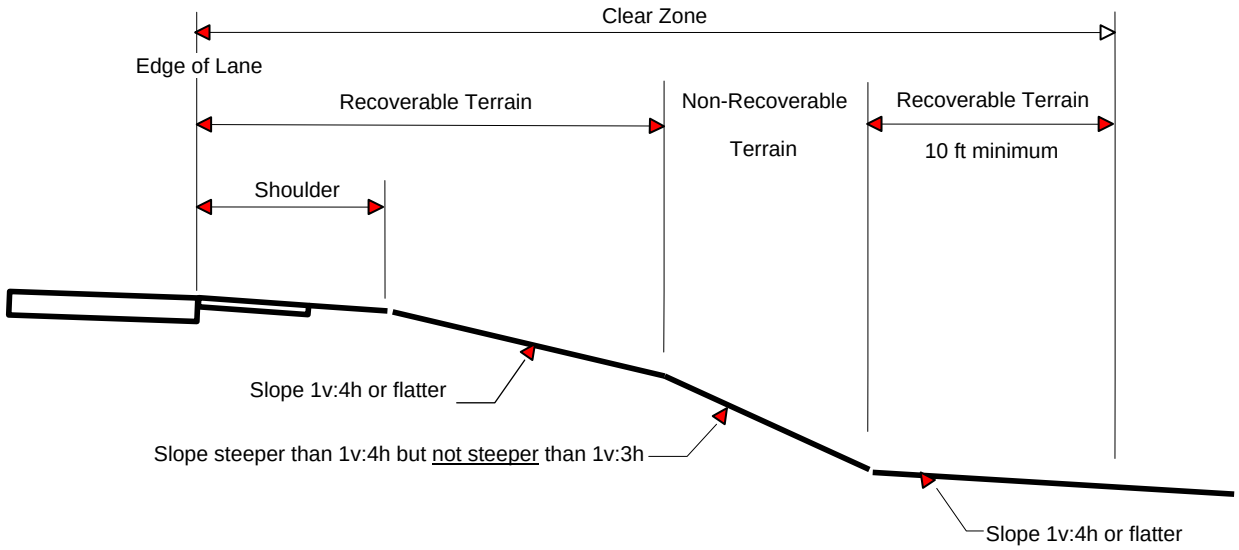


FIGURE 5.1.2.3 - RECOVERY AREA AND CLEAR ZONE WIDTH

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

When a non-recoverable slope encroaches the Clear Zone, then additional Clear Zone width is provided beyond the toe of slope equal to the width of the encroachment. A minimum of ten (10) feet of additional Clear Zone width is provided beyond the toe of slope. This additional Clear Zone width may be reduced if it extends beyond the R/W line. Clear Zones may also be widened based on crash history.

5.1.3 Where feasible and practical, luminaires should be attached to utility poles that meet the offset criteria, thereby eliminating unnecessary poles along **FDOT** facilities. A second pole line to support illumination may be allowed where the need for the illumination is properly documented, traffic safety requirements are met, practical alternatives using existing infrastructure do not exist, and compliance with all other UAM requirements can be achieved.

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** R/W, 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** R/W within the limits of public parks and historic sites.

- New underground utility installations may 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 for criteria listed in the bulleted items in Section 5.1.4:

  - Other locations are unusually difficult, or the cost is unreasonable or more undesirable from the standpoint of visual quality.

  - Undergrounding is not technically feasible or the cost is unreasonable.

  - The proposed installation will employ suitable designs and materials that 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 above ground and underground utility facilities on roadway R/W and operating rail corridors shall be placed outside the toe of the front slope and as close to the edge of the R/W as practical. For non-operating rail corridors, the location of all new or relocated longitudinal above ground and underground utility facilities shall be determined based upon an evaluation of existing and future use of the facility.

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 pounds per square foot at thirty (30) inches minimum depth and other requirements found in the ***UAM*** 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 **FDOT** 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 will be required to submit a permit application within one (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 R/W will be in accordance with all applicable **FDOT** specifications and standards, at the expense of the Permittee.

5.1.8 All underground service connections shall comply with the R/W restoration and minimum depth (except to meet above ground termination) requirements found in the ***UAM***.

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 -10.17 of the ***UAM***. The proposed means of placing the pipe shall be stated on the permit. Conditions that 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

In expanding areas adjacent to a limited access facility, the Permittee shall install utility facilities so as to minimize the need for crossings of the limited access facility. In areas where utility facilities are not available within reasonable distance, of where the utility facility is needed, a crossing by a utility facility may be permitted pursuant to Chapter 12 of the ***UAM***. The construction and maintenance of Utilities should be accomplished without violation of limited access principles.

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 R/W 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 requirements, 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 a minimum of forty eight (48) hours advance notification to the local **FDOT** Maintenance or Resident Engineer's Office.

5.3.5 Where a permitted facility exists within the proposed R/W 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 the ***UAM*** for Limited Access R/W 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 that is carried over or under a limited access facility, provision 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 could be serviced without interference to traffic on through-traffic roadways or ramps. Where distinct advantages and appreciable cost savings are affected by locating the utilities outside the R/W 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 R/W. 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, provision should be made for known and planned expansion of the utility facilities, and 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 criteria in the bulleted items listed in Section 5.3.10:

- Frontage roads where provided.
- Nearby or adjacent public roads and streets.
- Trails along or near the **FDOT** limited access R/W 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 R/W.

5.4 Attachments to Structures

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

- An obvious hazard to the public.
- The integrity of the structure will be affected.
- Inspection and maintenance operations will be unreasonably hindered.
- Aesthetics of structures, that 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 will be submitted by a Professional Structural Engineer, registered in the State of Florida, to the District Structures Design Engineer. 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 designee.

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

- Designs for utility attachments shall be in compliance with all applicable federal, state and local regulations, rules, and codes.

- 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.

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

- 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 obtained from the District Materials Engineer.

- 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.

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

- 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.

- 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.

- 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.

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

- 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 two hundred fifty (250) psi gage pressure should be reviewed in light of the added safety concerns.

5.4.4 Location - Utilities should be located beneath 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 and methods to be used for utility conduit, pipe coatings, and concrete repairs shall be approved by the **FDOT's** State Materials Office and in accordance with the site specific requirements of the structure as determined by the District Structures Design Engineer.

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 R/W 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.

All casing pipe materials and joints shall comply with the greater of either the industry standard requirement for the intended use, or those required to sustain the static and dynamic loads of **FDOT** construction or maintenance activities as well as continued public use without leakage or damage to the roadway facility. All welded joints shall be full depth welds.

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 that 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 a minimum of forty eight (48) hours advance 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, F.A.C.*** 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 five (5) years old, on **FDOT** R/W 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 seven (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 the ***UAM***. 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 the ***UAM***, the ***FDOT Standard Index No. 307***, in ***Appendix B***, and any special provisions of the permit.

5.7 Utility Accommodation in the Vicinity of Mechanically Stabilized Earth

Walls or Proprietary Earth Walls (MSE)

New utilities will not be accommodated within the limits of a Mechanically Stabilized Earth or Proprietary Earth Wall, hereafter referred to as an MSE wall, or its support structure unless approved by the State Structures Design Engineer or Designee. Special design constraints may be imposed when a pressurized utility carrier is placed within a confinement area, through, under, or immediately adjacent to an MSE Wall. This is to assure the structural elements take into consideration support limitations that may be created by the presence of utilities and potential damage or failure if a pressurized utility carrier leaks.

MSE walls function by using straps or fabric as structural elements throughout the earth fill to resist lateral wall stresses through friction. This makes it impractical and in some cases impossible to incorporate utilities among the layered structural elements because special design and construction problems result. Since MSE wall reinforcement relies upon friction between the soil and the structural elements, any reduction in compaction of the soil by the intrusion of utilities, excessive fluids, or gases can result in failure of the total MSE wall structure.

If a liquid or pressure vessel were allowed within or in close proximity to the structure and it ruptured, total failure of the MSE wall structure could occur resulting in injury or death to those occupying the structure, or immediately adjacent to it. If utility accommodation within the limits of an MSE wall structure appears to be the only practical alternative, only non-liquid and non-pressure vessels may be permitted without separate encasement.

All liquid and pressure carriers should be located as far from an MSE Wall as the R/W and construction technology permit. All existing utility facilities that are located below a proposed MSE wall structure must be evaluated for condition and relocation. The practical location of a utility facility must be determined based on MSE wall design and available R/W.

When an MSE wall is used as the approach or abutment support to an existing or proposed bridge, special consideration must be given to accommodating any utility facility attached to the bridge. In the area of transition between the bridge and the approach, there may be considerable differential settlement and induced shear stress that requires special design, material, and joint configuration. It may be required to accommodate the utility facility in a separate false work structure along the face of the MSE wall rather than incorporate it directly into the MSE wall structure. The design must be compatible with the aesthetics features applied to the overall structure.

All additional costs associated with accommodation of a utility facility on any **FDOT** structure, within an MSE wall structure, or in such close proximity so as to incur special design and construction costs, shall be paid for by the Utility unless a compensable interest exists.

Liquid or Gas pressure carrier installations:
All liquid or gas pressure carriers should be installed as far from the MSE wall as practical. When a request is made to place a liquid or gas line within or near MSE walls, special

consideration must be given to not only how the utility location may affect obtaining adequate compaction around straps or fabric but also the proximity of the carrier to the friction devices or the wall proper. All new liquid or gas carriers installed within the confinements of an MSE wall, whether longitudinally or crossing, must be encased in a separate conduit suitable to withstand the design and working pressures of the main carrier. For all new liquid or gas pressure carriers to be installed immediately adjacent to an MSE wall, whether a separate encasement will be required shall be at the discretion of the **FDOT** engineer. As a rule of thumb, separate encasement is suggested within five (5) feet of a wall and should be considered but is not mandated within the limits defined by a 1:2 (height:offset) slope intercept line from the top of the MSE to the top of the carrier.

Additional Coordination and Engineering Required:
When initial utility contact is made the project scope may not define whether a conventional earthen fill will be used or an MSE wall is required. Issues of this nature require earlier than normal lead-time for utility relocation or special design. Allowing a liquid or gas pressure carrier within MSE wall confinements may appear to be the only practical option. But, the Utility may need to plan on special loading conditions that may require replacement of some portions of the utility facility to accommodate localized stress or movement. These issues must be addressed with the District Design Engineer. As soon as it has been determined that an MSE wall is to be employed, the **FDOT** shall notify the Utility to begin its design considerations. Further coordination with the District Structures Design Engineer or designee may be required. Non-compliance with the above must be evaluated based on site conditions and will require an approved exception per Chapter 13.

Chapter 6
SPECIAL REQUIREMENTS FOR INSTALLATION, RESTORATION OF R/W AND MAINTENANCE OF A UTILITY

6.1 General

Erosion and sediment controls, if required, shall be installed before any work begins, and in accordance with local, state, and federal requirements. See ***Section 337.402, F.S.*** regarding restoration.

6.1.1 ***Chapter 556, F.S.,*** 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 two (2), nor more than five (5), business days before beginning excavation. Greater periods exist for certain circumstances. The Permittee must consult ***Chapter 556, F.S.,*** for specific requirements. The phone number for Sunshine State One-Call, Inc., is 1-800-432-4770. Note, this is not the same number that must be called for **FDOT** notifications. The Permittee must determine upon permit approval what **FDOT** number to call.

6.1.2 The Permittee should be aware that the utility work may require compliance with other state and local agency codes, standards, and criteria, including the Florida administered NPDES and 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 Work 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, require after the fact phone notification to the State DEP Area Drinking Water Administrator and a written notification within one (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, Section 125-8***, and ***Section 121 for Flowable Fill*** when flowable fill is used. This requirement applies to 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**. See ***Standard Indexes 307 and 505*** for details.

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 justifying why the Utility believes a deviation from the **FDOT's** standards is necessary.

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 a

minimum of forty eight (48) hours prior to application of the permanent patch. The Permittee will be required to maintain the permanent patch for a period of two (2) years from the date of installation.

6.1.7 Shoring will be required to conform with the provisions of ***Section 553.60 - 553.64, 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** R/W shall be removed by the Permittee.

Excess excavated material considered unusable by the **FDOT** shall be disposed of at the Permittee's expense, unless otherwise directed by the **FDOT**. This paragraph does not apply to material contaminated with hazardous waste or pollutant.

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 a minimum of forty eight (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 R/W) 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 four and one half (4.5) feet above grade), the DBH 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 six (6) inches 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 **FDOT** will take all reasonable measures to determine if an existing **FDOT** 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. Any **FDOT** R/W that has a grass mat will be re-sodded with like sod. The Permittee shall maintain that portion of the R/W 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 R/W 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 Chapters 62-770*** and ***62-730 F.A.C.,*** 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 Chapters 62-770*** and ***62-730, F.A.C.***, 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.

6.1.14 The use of flowable fill to reduce the time traffic is taken off of an existing facility is acceptable but must have prior approval by the Engineer. (See ***FDOT Standard Index 307)*** Flowable fill shall not be placed directly over loose, high plastic, or muck material (See ***FDOT Standard Index 505***) because settlement can occur due to the increased weight. Flowable fill use is allowed only when properly engineered for pavement crossings, whether straight or diagonal, and shall not be installed for significant depths or lengths. The maximum length shall be fifty (50) feet and maximum depth of six (6) feet unless supported by an engineering document prepared by a qualified licensed Florida professional engineer that specializes in soils engineering. The engineering document shall address the evaluation of local groundwater flow interruption and settlement potential. When flowable fill is used, the type shall be excavatable flowable fill as defined in ***FDOT Standard Specifications for Road and Bridge Construction, Section 121.*** When flowable fill is used for manhole stabilization and ring and cover adjustments, non-excavatable flowable fill shall be used. Flowable fill shall not be used on new **FDOT** construction projects unless approved and shown in the **FDOT** construction plans.

Chapter 7
MAINTENANCE OF VEGETATION

7.1 General

Maintenance of vegetation includes any method intended to alter or regulate the normal growth process of plants. 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** R/W is prohibited unless authorized by **FDOT** for invasive, undesirable, or exotic species. A forty eight (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, F.S.***, 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** R/W, unless otherwise approved in writing where the **FDOT** 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 the ***UAM.***

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 to a height of not less than five (5) 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 four (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 the utility. All undergrowth is to remain natural. Brush cuttings or debris discharged into the routinely maintained limits of the R/W 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.

See Section 6.1.11 regarding vegetation removal and restoration.

7.4 Chemical Control of Vegetation

Authorization to control vegetation chemically must be secured in advance, in writing, with a minimum of forty eight (48) hours advance 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** R/W 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 six (6) feet 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 six (6) feet height. Applications at a height of greater than six (6) feet 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 six (6) feet.

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 are permitted pursuant to State law and regulations. For examples of when other agency regulations or laws may apply, see the following:

- ***Rule 5E-2, Pesticides, F.A.C.***
- ***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 excessive 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 constitute 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.

Part 6 of the ***MUTCD*** is the national 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.

Pursuant to ***334.044(25), F.S.***, the FDOT has adopted safety standards in addition to those found in the MUTCD.

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, the FDOT Standard Specifications*** in ***Appendix A,*** and the ***FDOT Design Standards*** in ***Appendix C*** shall be used on **FDOT** R/W. ***Index 600, pages 1 - 10***, provides **FDOT** Policy and Standards. Changes are only to be made through **FDOT** approved procedures. ***Indexes 601 - 670*** provide typical application for various situations. Modifications can be made to these Indexes as long as the changes comply with the ***MUTCD*** and ***FDOT*** standards in ***Index 600***, ***pages 1 - 10.***

Index 665 is exclusive to use on Limited Access Facilities and may not be revised by a Utility but would apply if an exception to be located or work on Limited Access is given.

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.

The 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 that reflects actual conditions shall be designed in accordance with the standards set forth in the ***MUTCD***, the ***FDOT Design Standards*** and the ***FDOT Standard Specifications for Road and Bridge Construction.***

Almost all MOT can be accomplished using the typical applications in ***Indexes 601 - 670***. 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 by a qualified licensed Florida Professional Engineer. However, if the standards must be significantly compromised**,** an alternate TCP is required and must be prepared, signed and

sealed by a qualified, licensed Florida Professional Engineer.

All changes to standards contained in ***Standard Index 600, pages 1 - 10***, that are submitted as part of a TCP require **FDOT** approval and may require the signature of a qualified licensed 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 - 670 were developed with the intent of applying ***MUTCD*** and **FDOT** guidelines for setting up traffic control devices for many common construction and maintenance scenarios while maintaining the specific criteria contained in ***Standard Index 600, pages 1 - 10***. Actual field conditions or utility work scenarios may not be identical to those represented in ***Standard Indexes 601 - 670***. The Utility may combine one or more, or use a portion of these specific standard indexes as appropriate without the signature of a qualified licensed Florida Professional Engineer. 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 set up revisions based on site conditions. This does not 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 its 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 Specifications and Job Control

The Standard Specifications for Road and Bridge Construction, 2004 Edition, ***Subarticle 102-3.2***, Worksite Traffic Supervisor is deleted and replaced with the following: The Permittee shall provide an individual who is responsible for initiating, installing, and maintaining all traffic control devices as described in Section 102 and in the permit. This individual, when covered by an annual certification pursuant to Section 8.4, shall have in his/her possession suitable identification issued or approved by the UAO showing his or her relationship to the certifying UAO. If the UAO elects to have its employees, agents and/or subcontractors trained in accordance with the **FDOT's** Maintenance of Traffic Training Procedure in Appendix D in lieu of submitting an annual certification, as described in the ***UAM,*** Section 8.4, this individual shall have in his/her possession a valid (no more than four years old) wallet card verifying the successful completion of the appropriate training.

Provide trained flaggers to direct traffic where one-way operation in a single lane is in effect and in other situations as required.

8.4 Training

The Permittee is responsible for ensuring that individuals responsible for utility work zone traffic control planning, design, implementation, inspection, and/or for supervising the selection, placement, or maintenance of traffic control schemes and devices in work zones on the State Highway System R/W have proper training as to the MOT requirements prescribed in Appendix A and C of the ***UAM***. The Utility may choose to either self certify training or use an approved training provider in accordance with the **FDOT's** Maintenance of Traffic Training Procedure 625-010-010 provided in Appendix D. If the utility elects to self certify, the utility shall submit a written certification every two years that all its employees responsible for these utility work zone activities have been trained as to the MOT requirements prescribed in Appendix A and C of the ***UAM***. If the utility elects to self certify agents or subcontractors they shall list each agent or subcontractor with the self certification.

When changes are made to Appendix A or Appendix C, the Utility shall certify that the individuals responsible for utility work zone traffic control have been properly trained in such changes affecting work zone traffic control.

8.5 Rail Flagging

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

8.6 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.

8.7 Requirements for Flashing Lights

Construction and maintenance vehicles used on the State R/W shall be equipped with a minimum of one (1) Class 2 amber or white warning light that meets the ***Society of Automotive Engineers Recommended Practice SAE J845*** or ***SAE J1318***, incorporated herein by reference, that is unobstructed by ancillary vehicle equipment such as ladders, racks, or booms. If ancillary equipment obstructs the light, more than one light may be required. The lights shall be operating when a utility vehicle is operated in a utility work area, when a potential hazard exists, or when operating the vehicle at less than the average speed for the facility while performing maintenance activities or making frequent stops.

Chapter 9
LOCATION CRITERIA FOR UTILITIES ON NON-LIMITED ACCESS FACILITIES

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

General - Section 9.1 of the ***UAM*** 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. It is recognized 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 a 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 of the ***UAM*** 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 to 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 that 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.

9.1.1 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 two (2) times in any three (3) consecutive years of the last five (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 R/W by the Utility would be required or when the following conditions, listed in the bullets in Section 9.1.1 are simultaneously met:

- When the pavement or curb limits have not changed,

- When and where the utility facility will not interfere with other **FDOT** improvements,

- The utility facility is not located in a control zone or condition as defined in Section 9.2 and shown in Exhibit I,

- When any one or more of the conditions exist described in the bullets listed immediately below:

  - When the benefit to cost ratio of relocation is less than 2,

  - The above ground fixed object cannot be moved sufficient to meet the required horizontal clearance without violating other **FDOT** criteria or utility codes,

  - Relocating the fixed object will not provide a minimum of four (4) feet of additional horizontal clearance (this does not apply where there is an ADA non-compliance issue),

  - 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 four (4) inches or greater in diameter, six (6) inches 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 do not justify failure to relocate. Local ordinances regarding tree trimming or removal will be considered in the evaluation of what can be done,

  - 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), or

  - When insufficient usable R/W exist.

9.1.2 Clearances (RRR):

- **Horizontal Clearance: (RRR)** - For RRR projects, new construction horizontal clearance criteria set forth in Chapter 5 of the ***UAM*** shall be used where practical when relocation of an above ground fixed object is required. On urban RRR projects with curb or curb and gutter in restricted R/W areas, the clearance may be reduced to one and one half (1.5) feet from the face of the curb or six (6) feet from the edge of the traveled-way to the nearest edge of the above ground fixed object. When the minimum one and one half (1.5) feet from the face of the curb or six (6) feet 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*** of the ***UAM*** on control zone limitations.

- **Clear Zone: (RRR)** - Clear zone requirements for RRR projects with flush shoulders are outlined in Table 9.1.2.2. These clear zone requirements also apply to curbed facilities in non-restricted R/W areas. 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 as used by the **FDOT** does not apply when curb or curb and gutter is adjacent to the traveled-way in restricted R/W areas. For these locations, horizontal clearance criteria are used to establish the minimum offset to an above ground fixed object. Clear zones must be adjusted for the effects of shoulder slopes. Adjustments due to shoulder slope are the same as with new construction and are described in Figure 5.1.2.3.

Table 9.1.2.2 - RRR Clear Zone (feet) - Flush Shoulders and Curbed Sections in Non-restricted R/W Areas

Note: Design Speed is shown in the Table. However, Posted Speed may be used as default criteria for areas where the Design Speed is not published. Design Speed shall be used when available. See Section 5.1.1

DESIGN 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 additional clear zone per Figure 5.1.2.3.
3. Clear zone width is measured from the edge of the traveled-way.

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

9.2 Control Zones or Conditions for RRR:

Control zones are areas in 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. They extend outward from the pavement to the limits of new construction criteria and are further described as follows:

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

9.2.2 Within the return radii of an intersecting street and the new construction horizontal clearance distance,

9.2.3 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 R/W limits,

9.2.4 For a distance of one hundred (100) feet 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 constructed on a reverse curve, the measurement is to be taken from the point of intersection of the trailing curve),

9.2.5 For a distance of one hundred (100) feet 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 constructed on a reverse curve, the measurement is to be taken from the point of intersection of the leading curve).

9.2.6 For a distance of three (3) feet 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.

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

9.2.8 The area on the outside of a curve when the operating speed exceeds thirty-five (35) mph or downstream of a kink in the alignment for a distance of one hundred (100) feet. In each case the area falls within the new construction horizontal clearance distance unless protected by a barrier. For curves, if the radius exceeds three thousand (3,000) feet, no control zone exists, and control zone requirements do not apply. For kinks in the alignment, if the kink is less than five (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 of thirty six (36) inches below the top of pavement and thirty (30) inches below the existing unpaved ground, including ditch grade. Where provided by law, other governmental agencies, rail facilities, and state, local, and federal 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 R/W 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 R/W 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 twelve (12) feet 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 eighteen (18) feet vertical clearance over the roadway. Where provided by law, other governmental agencies, rail facilities, and state, local and federal 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 thirty six (36) inches below top of pavement and thirty (30) inches below unpaved ground line, including ditch grade. Where provided by law other governmental agencies, rail facilities, and State, Local and Federal codes may require a greater clearance.

9.4 FDOT Railroad Corridors

Rail corridors will be treated as a Limited Access Facility.

9.4.1 **Operating Railroad Corridors -** All utility location criteria shall be in accordance with the criteria set forth by the **FDOT** Permit and Standard Railroad 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 the ***UAM*** 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, F.S.***

9.6 Restricted & Non-Restricted 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 Restricted R/W Areas. Examples of when this would apply are when insufficient R/W exists, buildings exist with little or no set back from the R/W, 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-Restricted R/W Areas represent those areas along a project (regardless of project type or typical section) where sufficient border width does exist and would accommodate 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 **FDOT'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 same horizontal clearance standards applied to utility poles. Guy wire anchors are considered to be fixed objects when they extend more than four (4) inches in height above the ground surface.

10.2 For the purpose of the UAM, frangible base poles will be accepted if in accordance with the ***AASHTO Design Specification: Standard Specifications for Structural Supports for Highway Signs, Luminaires, and Traffic Signals, 4th Edition, with 2002, 2003, and 2006 Interims***.

10.3 On projects where the utility or other obstruction is 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 ensure that a minimum thirty two (32) inch width is maintained on sidewalks in accordance with ***Sections 553.501-553.513***, ***F.S., "The Florida Americans With Disabilities Accessibility Implementation Act"***. In each case where a deviation is proposed, an exception must be requested.

10.4 Where practical, excavation will not be allowed within eight (8) feet of the edge of the pavement.

10.5 Clearances for above ground lines that are parallel to the R/W will be sixteen (16) feet minimum except where side roads connect to the State transportation system, in which case eighteen (18) feet minimum is 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 **FDOT** determines the utility's presence creates the conditions described in 10.8.1 through 10.8.3.

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

Deactivated underground gas line limits shall be shown on the utility plans. The limits to remain shall also be stated in the utility work schedule. For deactivation of lines see ***49 C.F.R., Part 192.727***, and the rules of the Public Service Commission.

10.8.1 Compromises safety at any time for any facility user, or during construction and maintenance operations,

10.8.2 Prevents another utility facility from locating in the area when other alternative locations are not available,

10.8.3 Creates a maintenance condition that would be disruptive to the transportation facility's use or add cost to **FDOT** improvements which are not paid for by the Utility.

10.9 Utility Appurtenances

10.9.1 Should be aesthetically acceptable and in compliance with industry standards.

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

10.9.3 Must not conflict with other existing facilities.

10.9.4 Shall be located as close to the R/W limits as practical.

10.9.5 New underground utility facilities less than thirty (30) feet 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 thirty (30) feet 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 HS 20 military load. HS 20 is a three axle truck loading condition where one axle load of 24,000 pounds or two axle loads of 16,000 pounds each, spaced four (4) feet apart may be used, whichever produces the greater stress, in lieu of a single axle 32,000 pound load. This does not guarantee to the Permittee that these appurtenances will not be subject to greater loads.

Any new single utility facility above or below ground, other than power or telephone poles and their appurtenances, larger than eighty (80) cubic feet in size must be submitted to the District Maintenance Engineer or designee for approval.

10.9.6 When and where multiple conduits are pulled to construct new duct systems, access points such as manholes or hand pulls shall be limited to placement over the ducts in line, and shall minimize obstruction of the R/W use by others. Multiple access points on a duct system may not be any

closer than fifty (50) feet to minimize impact to the overall R/W infrastructure. This requirement is not intended to cause sharing of manholes between power and non-power users.

10.9.7 No concrete foundation for whatever purpose shall be allowed to be constructed more than four (4) inches above the existing grade.

10.9.8 All new or replacement installations of all types that would obstruct any portion of the sight window as described in ***FDOT Standard Index 546*** by a width of more than fifteen (15) inches, should be evaluated to minimize sight window obstruction. Non-compliance does not require submittal of an exception.

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 R/W, 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 unresolved dispute, the final location will be determined by the **FDOT**.

10.11 All new or replaced underground facilities within the R/W shall be made electronically detectable using techniques available in the Industry. Where as-builts are required in accordance with the ***UAM*** or ***FDOT Standard Specifications 555, 556, or 557***, an as-built plan of the utility facility location including a depth tabulation (when profile plots or elevations are not provided) shall be furnished at the time of the certification of completion of the project for which a permit was given.

10.12 The contractor qualifications for removal, encapsulation, or enclosure of materials containing asbestos shall be in accordance with ***Chapter 469, F.S.***

10.13 Conventional methods of trenching or "plowing" in utility facilities are acceptable on **FDOT** R/W so long as such methods will not adversely affect pavement, base, other transportation facilities, or other permitted facilities in accordance with ***Section 557 – Vibratory Plowing, FDOT Standard Specifications*****.**

10.14 The preferred methods for crossings under pavement or other facilities are jack/bore and directional boring. Jack and bore and directional boring operations shall comply with ***FDOT Standard Specifications Section 555 for Directional Bore*** and ***Section 556 for 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 bore and jack/bore are not feasible. Open cutting operations shall be in accordance with ***Standard Index No. 307, Utility Cut.*** (Other Indexes, such as ***Indexes No. 500, Removal of Organic and Plastic Material, No. 501 Geosynthetic Reinforced Soils, No. 505, Embankment Utilization,*** and ***No 506 Miscellaneous Earthwork Details***, may apply).

10.16 Underground crossing operations may begin without the **FDOT** Engineer present on site if it can be determined otherwise that proper preparations have been made. If it is required that an **FDOT** Engineer be on site at any time, the permit shall stipulate the circumstances.

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

10.18 All pipe materials and joints shall comply with the greater of either the industry standard requirement for the intended use when defined, or those required by the **FDOT** to facilitate static and dynamic loading (including construction) to avoid damage to the roadway facility. All welded joints shall be full depth welds.

10.19 All utility facilities previously placed out of service and left in place, that are returned to service other than for a temporary emergency or construction expediency, will require a new permit. The new permit shall at a minimum state the type and size of the facility, general location, and identify the limits of reactivation. No cross sections, profiles, or additional engineering support information supplied in the original permit on the existing facility will be required.

If the utility facility to be placed out of service and left in place contains voids, such as a pipe conduit and the facility's structural integrity is questionable, the **FDOT** shall require it to be filled with excavatable flowable fill as defined in ***FDOT Standard Specifications*** for ***Road and Bridge Construction, Section 121***. If the **FDOT** has no concerns regarding structural integrity of the facility, it may be left open. If the **FDOT** elects to have the facility filled, at the option of the Utility in lieu of filling it, as-built plans must be provided to the **FDOT** that show mutually agreeable information to document the location of the facility for possible future reactivation and include a certification from the Utility and prepared by a qualified licensed Florida Professional Engineer that states the facility is structurally sound and leaving it in place will not damage the roadway for the design life of the **FDOT** facility. The design life of the **FDOT** facility can be obtained from the District Design Engineer's Office.

10.20 A separate permit is required for the placement of any antennae on the exterior of any utility appurtenance within the **FDOT** R/W. This provision does not apply to the installation of antennae for remote communication or switching devices to operate or maintain a utility facility.

10.21 No new utility structure or cabinet whether located above or below ground, that contains any liquid petroleum fuel for back-up power sources, may be installed within the **FDOT** R/W. Existing fuel sources (not facilities) must be evaluated for relocation when the transportation facility is reconstructed. These provisions do not apply to utility facilities that exist or have prior property rights unless expressly prohibited in a subordination agreement.

10.22 The construction or installation of any new utility lift, pump, or power generating station is not permitted within the R/W in excess of eighty (80) cubic feet. These provisions do not apply to existing utility facilities or those that have prior property rights unless expressly prohibited in a subordination agreement.

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 that 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. It is therefore essential to all 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 required to and responsible for obtaining a utility permit and developing any associated project work schedule for the installation and maintenance of utility facilities within the R/W of any State Highway System. These documents require the Utility to locate as necessary any of its 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 **FDOT** R/W 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***.

At a minimum, identifying the location and providing properly formatted support documentation 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 responsibility of the utility owner to identify and provide locates for major utilities within the **FDOT** right of way. Gravity service connections and laterals are not normally considered major utilities. When required, in special circumstances of identified design conflicts, obtaining locate information for gravity service connections and laterals within the **FDOT** R/W is the responsibility of the Utility.

While it is legally the responsibility of the Utility to physically locate all of its utilities and provide that information to the **FDOT**, for construction projects the **FDOT** design engineer, with the assistance of the DUE and construction personnel, should be consulted to determine the locations and quality levels of locate where utility information is known to be needed. The **FDOT** may at its option initiate an actual survey using its own forces or under a design / surveying contract to accomplish the locates as a matter of expediency. 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 State One Call", it is the complete responsibility of the Utility.

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

Existing major underground utilities suspected of being located within three (3) feet of proposed construction operations that would threaten the utility should be considered for Quality Level “A” locate information. The decision to allow utilities to remain within three (3) feet of new construction operations will be made by the District Design Engineer in consultation with the DUE and appropriate construction personnel.

The Utility is required to respond to and furnish information regarding the location of its facilities in a reasonable format determined by the **FDOT** and in a timely manner. Unless otherwise stated, at a minimum this shall be interpreted to mean the Utility will plot the location of its facilities on **FDOT** supplied roadway plans in accordance with the **FDOT** Color Code for location and disposition of facilities and return them to the specified engineer. When the Utility already has and uses compatible software, and when the **FDOT** furnishes the base CADD document to work from, the Utility shall furnish CADD markups in the appropriate color code.

The **FDOT** Color Code to be applied to construction and design plans that shall represent the disposition of utilities is as follows:

Red – Existing utility facilities to be removed or relocated horizontally to some other location, or existing facilities to be Placed Out Of Service (Deactivated) but left in place.
Green – Existing utility facilities to remain in place with no adjustment.
Brown – Existing utility facilities that are to be adjusted vertically but to remain in the same horizontal alignment or completely new facilities to be installed.

NOTE: In addition to the color code, the limits of the facilities to be removed, relocated, adjusted, or placed out of service (deactivated) shall be delineated. If the work is associated with an **FDOT** construction project, utility delineation will be shown by station. For all other permitted work, the limits shall be delineated by distance from a well established point such as the center of an intersection, center of a RR, etc.

When underground utilities are granted access to limited access R/W by the exception process, certified as-builts must be provided as a condition of the permit. All exceptions requesting use of any limited access R/W will require a certified as-built survey and plan signed and sealed by a registered land surveyor in accordance with ***Chapter 472, F.S., Land Surveying and Mapping***. When as-built plans are required, they shall be submitted to the DUE no later than thirty (30) days following the completion of the permitted

installation.

Whenever the Utility already has and uses compatible CADD software, and as-built plans are required, they shall be provided in an electronic format. The plans shall describe the facility in detail and in accordance with Chapter 3 of the ***UAM***. Underground facilities shall indicate their location in the horizontal and vertical plane in accordance with ***The North American Vertical Datum of 1988 (NAVD)***. For aerial facilities, elevation data is not required.

11.3 Locates

The following identifies the key elements within the quality level of utility locates in ascending order about which Subsurface Utility Engineering is applied:

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

A detailed description of the scope of work to be included to achieve the various Quality Levels follows:

Quality Level “D” locates are information obtained solely from a review of utility records for facilities that may be affected by the project. 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. Quality Level “D” may be appropriate for use early in the development of a project to determine the presence of utilities. Applicable records may include previous construction plans in the area, conduit maps, direct-buried cable records, distribution maps, transmission maps, service record cards, “as-builts” and record drawings, field notes, county, city, UAO or other geographic information system databases, circuit diagrams, or oral histories. The records should be reviewed for indications of additional available records, duplicate information and credibility of such duplicate information, and need for clarification by UAO’s. The end product of a Quality Level “D” would be a utility composite drawing or equivalent. The engineer should also make professional judgments regarding the validity and location of topographic features on records versus current topographic features (when available) and conflicting reference of utilities. The engineer should indicate the quality levels, utility type and /or ownership, date of depiction, accuracy of depicted appurtenances, end points of any utility data, active, placed out of service, size, condition, number of jointly buried cables, and encasement.

Quality Level “C” locates are information obtained to augment Quality Level “D” information. This involves topographic surveying of visible, above ground utility features such as poles, hydrants, valve boxes, circuit breakers, etc. If previously surveyed, check survey accuracy and completeness for applicability with the existing project. Correlate applicable utility records to the surveyed features, taking into account the geometries and indications on the records of these surface features. Determine when records and features do not agree and resolve discrepancies. Additional resolution may result from consultation with UAOs.

Quality Level “C” may be appropriately used early in the development of a project and will provide better data than Quality Level “D” information alone. Designers cannot be sure their design is appropriate nor can construction proceed without caution when using information for underground utilities based only on Quality Level “D” and “C” locates.

Quality Level “B” locates are information obtained to augment Quality Level “C” information. Quality 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. Mark the indications of utilities on the ground surface for subsequent survey. Care should be taken to differentiate markings placed on the ground for design purposes from those placed on the ground for damage prevention purposes. Survey all markings that indicate the presence of a subsurface utility. This survey should be to the accuracy and precision dictated by the project’s survey control. Depict all designated utilities. Correlate the designated utilities’ depictions with utility records and/or surveyed appurtenances to identify utilities that may exist but were not able to be designated. Resolve differences between designated utilities and surveyed appurtenances. Recommend to the project owner additional measures to resolve differences if they still exist.

Quality Level “A” locates provide the highest level of accuracy of utility locations in three dimensions. This Quality Level may apply manual, mechanical, or nondestructive (e.g., vacuum excavation) methods to physically expose utilities for measurement and data recording. Quality Levels “B”, “C”, and “D” locates are incorporated in Quality Level “A” locates. The designer should obtain Quality Level “A” locates at highway/utility conflict points where verified information is necessary. Select an appropriate method of gathering data that will achieve the accuracies and precision required by the project. These accuracies are currently typically set to one half (0.5) inch vertical and to applicable horizontal survey and mapping accuracy as defined by the project owner. Excavate test holes exposing the utility to be measured in such a manner that protects the integrity of the utility to be measured. Comply with applicable utility damage prevention laws, permits, and specifications and coordinate with Utility and other inspectors, as required. Determine (a) the horizontal and vertical location of the top and/or bottom of the utility referenced to the project survey datum; (b) the elevation of the existing grade over the utility at a test hole referenced to the project survey datum; (c) the outside diameter of the utility and configuration of non-encased, multi-conduit systems; (d) the utility structure material composition, when reasonably ascertainable; (e) the benchmarks and/or project survey data used to determine elevations; (f) the paving thickness and type, where applicable; (g) the general soil type and site conditions; and (h) such other pertinent information as is reasonably ascertainable from each test hole site. Resolve differences between depicted Quality Level “A” data and other quality levels.

11.4 Subsurface Utility Engineering (SUE)

SUE is more than an established engineering technology that can provide horizontal and

vertical locations of underground utilities to produce an accurate picture of underground infrastructure. Each **FDOT** District has contracts for SUE. The Utility should determine if the location of its facilities will be obtained under the **FDOT** design, construction, and maintenance activities.

Chapter 12

ACCOMMODATION OF UTILITIES ON LIMITED ACCESS R/W

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 governing use and points of access to any limited access R/W on the Federal Aid Highway System. This policy applies to all limited access R/W use on the State Transportation System except for utility facilities required for operating and providing service to facilities on limited access R/W.

12.1.2 The Limited Access Policy prohibits new utilities from locating longitudinally within limited access R/W.

12.1.3 All utility accommodations other than existing or new longitudinal encroachments approved by exception to the Limited Access Policy on limited access R/W shall comply with standards and criteria set forth in this Chapter.

12.1.4 The Limited Access Policy prohibits utility attachments to bridge structures on limited access R/W.

12.1.5 Rails, 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.

12.1.6 For survey and as-built requirements see Section 11.2 of the ***UAM***.

12.1.7 Any new longitudinal installations on limited access R/W are permitted only by exception and must be approved by the Chief Engineer or designee. For non-operating rail corridors the designee includes the respective District Secretary.

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 twenty four (24) feet minimum vertical clearance over limited access facilities. Other governmental agencies, rail facilities, and state, local, and federal codes may require a greater clearance. The greater clearance required prevails. No poles or structures will be permitted within R/W of the main travel way.

12.2.3 **Crossing (Underground)**- Underground crossings require a minimum vertical clearance of forty eight (48) inches below the pavement surface of the limited access facility. For other connecting or crossing highways located within the limited access or controlled access zone, thirty six (36) inches below the pavement surface, or thirty (30) inches below unpaved ground, including ditch grade, is required. Other governmental agencies, rail facilities, and

state, local, and federal 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 the ***UAM***.

Refer to Chapter 10 of the ***UAM*** regarding alternative methods of underground installation.

12.3 TELECOMUNICATIONS FACILITIES ON LIMITED ACCESS R/W

The Department will consider proposals to install facilities on its limited access highway rights of way.

The Department's actions in this area will be consistent with the provisions of the State's present and future traffic and transportation management communications requirements, contingent upon departmental safety and engineering determinations.

CRITERIA FOR PLACEMENT OF TELECOMMUNICATION FACILITIES ON LIMITED ACCESS RIGHTS OF WAY

The placement of wireless (communication towers) or wireline facilities on limited access rights of way (R/W) will be in accordance with the criteria below. This criteria applies to the physical construction of the towers, fiber placement, buildings, related appurtenances, routine service visits, and maintenance activities.

1. GENERAL CRITERIA FOR WIRELESS AND WIRELINE TELECOMMUNICATION FACILITIES

A. General Access

Integrity of access points and location of the R/W fence will be maintained. Access through the R/W fence for towers located off the R/W will not be allowed. Facilities located along the mainline will be enclosed by a fence tied into the existing R/W fence so as to not break the continuity of the R/W fence. Access to these areas will be through a locked gate.

B. Access for Construction of Facilities

1. Towers - access for construction will be the same as that allowed in the Criteria for Placement (refer to ***Section 2***); no mainline access will be allowed without the permission of the Department and the Federal Highway Administration (FHWA).

2. Underground wireline/conduit and manholes/pullboxes - access for placement will be allowed from the mainline.

3. Buildings and above ground appurtenances - access for installing buildings and other above ground features will be the same as that allowed in the Criteria for Placement (refer to ***Sections 2 or 3***).

C. Access to Facilities for Maintenance

Access to completed facilities for routine service visits and maintenance activities will be by the same method as that allowed in the Criteria for Placement (refer to ***Sections 2 and 3***). Access to completed facilities from the mainline for expansion, routine servicing, or maintenance is allowed. However, maintenance of traffic (MOT) shall be in accordance with the Department's ***Roadway and Traffic Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System, Standard Index 612*** *in* ***Appendix C*** (see work area insert for work not to exceed 60 minutes).

D. Construction Work Zone Maintenance of Traffic (MOT)

Industry providers, vendors, and their subcontractors will follow the same methods for MOT as that used by the **FDOT's** construction and maintenance personnel.

E. Clear Zone Preservation

In all cases, locating towers, buildings, and other types of above ground appurtenances will be located 50 feet from the edge of traveled way, when possible. No above ground appurtenances will be permitted within the clear zone. A minimum distance of 50 feet from the edge of traveled way should be the standard where possible. Above ground appurtenances will not be placed in locations that require new barriers to maintain a safe clear zone.

F. Power, Phone or Other Utilities to Serve Equipment Buildings or Related Facilities

Power to the equipment building/related facilities may be brought to a drop pole on **FDOT** R/W adjacent to the fence and then be run underground to the equipment building or related facility. All utility runs will not be allowed longitudinally inside the R/W.

2. CRITERIA FOR WIRELESS TELECOMMUNICATION PLACEMENT Towers, Buildings, and Other Above Ground Appurtenances

Towers, shelter buildings and other above ground appurtenances will be located as far as possible from the edge of traveled way, immediately adjacent to the tower, and immediately adjacent to the R/W fence; in no case shall any above ground appurtenances be built within the clear zone. The preferred locations listed below, in order of preference, will be considered for placement:

1. Along the mainline, as close as possible to the R/W fence, with access from outside the R/W for construction. Access for maintenance activities may be either outside or from the mainline. If access is from the mainline the Department's ***STANDARD INDEX 612 in Appendix C*** will be followed for MOT, see ***Paragraph 1. C.***

2. Within weigh stations, with access from the parking lot or ramps.
3. Within interchange areas, with access from outside the limited access R/W and connecting ramps, e.g., access is from frontage roads or crossroads.
4. Within interchange areas, with access from the right side of the ramp. This does not include loop ramps (see ***No. 6***).
5. Within interchange ramp infield areas, with access from left side of the ramp.
6. Within interchange areas, inside loop ramps, with access from the right side of the ramp.
7. Within aesthetic areas such as rest areas or welcome centers, with access from the parking lot or ramps.

3. CRITERIA FOR WIRELINE TELECOMMUNICATION PLACEMENT

A. Buried Fiber Optics Cable

The cable/conduit will be placed within a maximum 10 foot utility strip located immediately adjacent to the existing R/W line, only on one side in one direction of the roadway R/W. For aerial spanning of crossroads, utility poles/guide wires are allowed provided the poles/wires can be placed near the R/W limits/R/W fence, parallel to the mainline and outside the clear zone.

B. Equipment Buildings/Other Above Ground Appurtenances

Shelter buildings and other appurtenances will be located as close as practical to the utility strip but in no case within the clear zone. The preferred placement locations are listed below, in order of preference:

1. Along the mainline, as close as practical to the R/W fence, with access from outside the R/W for construction and from the mainline for maintenance. Department's ***Standard Index 612 in Appendix C*** will be followed for MOT, see ***Paragraph 1. C.***
2. Within weigh stations, with access from the parking lot or ramps.
3. Within Interchange areas, with access from outside the limited access R/W and connecting ramps, e.g., access is from frontage roads or crossroads.
4. Within interchange areas, with access from the right side of the ramp. This does not include loop ramps (see ***No. 6***).
5. Within interchange ramp infield areas, with access from left side of the ramp.
6. Within interchange areas, inside loop ramps, with access from the right side of the ramp.
7. Within aesthetic areas such as rest areas or welcome centers, with access from the parking lot or ramps.

C. Underground Devices - Manholes, Pullboxes, etc

Underground devices requiring any type of routine service or site visit will not be allowed within the clear zone. In no case will underground devices be located within paved areas, including shoulders. The preferred placement locations are listed below, in order of preference:

1. Near R/W limits/fence.
2. Between fence and ditch back-slope.
3. Ditch back-slope.
4. Front-slope - between ditch and outside edge of shoulder.

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 prohibitive to comply with a particular design criteria or standard. Where compliance with a Policy, 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'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 **FDOT's** criteria are met, no Exception is required.

The **FDOT** has established a formal process for the documentation and approval of deviations from criteria and standards used within the **FDOT** R/W. This is to ensure cost effective and sound engineering principles are applied.

The Exception process is not solely to be applied to **FDOT** roadway projects. Any time a Utility cannot comply with **FDOT** policy, criteria, or standards contained within the ***UAM***, an Exception is required before the request will be permitted. This applies to any new installation by a utility through the District Maintenance Office except as expressly excluded elsewhere in the ***UAM***. One example (not all inclusive) of an exclusion is replacement of an existing pole where there is no accident history.

In instances where the **FDOT** enters into an agreement for joint use of pole facility for lighting or the location of the poles are established by lighting requirements contrary to clear zone or horizontal clearance requirements, the preparation of the required Exception shall be the responsibility of the **FDOT** and not the Utility.

In those cases where specific guidelines are not defined and the criteria cannot be complied with, the Utility must relocate or apply for 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, standard, or policy cannot 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 qualified licensed Florida 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:

- To the extent it is not prohibited by law, the **FDOT** will furnish to the Utility, upon request, a copy of any safety study accomplished for a project under consideration for improvement,

- To the extent it is not prohibited by law, 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 process be used. The specific documentation and approval requirements for an Exception must be met. The Utility must clearly document the action taken and approval given. Non-**FDOT** Construction Project related Exception requests shall be processed by the District Maintenance Office. **FDOT** Construction Project related Exception requests shall be processed through the District Design Engineer's Office. To aid in the decision processes, identification and processing of Exceptions, flowcharts, and considerations have been provided as Exhibit B through I.

In the event an Exception request has been denied by an **FDOT** District Office and the Utility believes the denial to be unreasonable, a redress process has been developed. 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 provide the request for an Exception directly to the Office of the State Roadway Design Engineer for a determination. Such determination will be processed by the State Roadway Design Engineer within ten (10) **FDOT** working days.

13.2 Types of Exceptions:

Exceptions are required when any one of the following criteria or policies described in Sections 13.2.1 through 13.2.6 that are not complied with or by policy requires an Exception prior to access or use:

13.2.1 Vertical Clearance
13.2.2 Horizontal Clearance
13.2.3 Limited Access R/W Use (L/A R/W, Rails, Trails, Bikeways)
13.2.4 Control Zone Use
13.2.5 Clear Zone
13.2.6 MSE Walls

Note: Exception type 13.2.3 is referred to as a Policy Exception. All others are referred to as Criteria or Standards Exceptions. A Policy Exception for access may be approved in the District without Central Office involvement. However, if the Policy Exception contains non-compliance with any of the Criteria or Standards Type Exceptions, review, concurrence and approval as appropriate must be sought from the Central Office. If more

than one type of Exception is required, all will be processed as a single package with the appropriate boxes checked on Exhibit A, Utility Exception Form.

Exhibit A is provided as an example document for requesting an Exception. This Form must be completed and included as part of the file documentation regardless of whether it is to be submitted to the Central Office or not. The purpose is to have a concise submittal form and a means to readily perform Quality Assurance activities for evaluating any need for future criteria, standards and policy changes. To assist in determining criteria, the tables found in Chapter 5 and the Exhibits section of the ***UAM*** are provided with excerpts that relate to utilities as copied from the ***"AASHTO Publication, A Policy On Geometric Design Of Highways And Streets," 2001 Fourth Edition***.

13.3 Concurrence and Approval of Exceptions

Exceptions on projects having full federal oversight and involvement require a recommendation by the District Design Engineer and the Utility for approval by the FHWA Division Administrator. On non-full Federal oversight projects, Exceptions are recommended by the Utility or the responsible qualified licensed Florida 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 qualified licensed Florida professional engineer registered in the State of Florida.

Exceptions for locating on Limited Access Facilities such as Non-Operating Railroad Facilities, Trails, and Bikeways, must be approved by the District Secretary or designee and do not require concurrence from the State Roadway Design Engineer. Exceptions for locating on all other Limited Access Facilities including Operating Railroad Facilities must be approved by the Chief Engineer or designee.

Any exception for design speed on the FIHS system shall require concurrence from the Chief Engineer or designee.

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

All other Exceptions require concurrence from the State Roadway Design Engineer.

Any reduction in vertical clearance over an interstate roadway to less than sixteen and one half (16.5) feet requires an **FDOT** Exception.

Any exception that reduces vertical clearance over an interstate roadway to less than sixteen (16) feet requires FHWA coordination with Military Traffic Management Command (MTMC) and approval before the District Design Engineer can approve the exception.

13.4 Coordination of Exceptions

In order to allow time to research alternatives and begin the analysis and documentation of activities, it is critical that 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 an exception has been determined, the District Design Engineer or responsible qualified licensed Florida professional engineer must coordinate with the appropriate persons identified above to obtain conceptual concurrence and any required documentation requested. This coordination may be expedited by reviewing the exception with the District's **FDOT** Area Design Engineer.

For exceptions requiring full Federal oversight, 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 exception with the District's FHWA Area Engineer. It is good practice to review the exception with both 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 Exceptions

The objective of the Utility is 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 exception requests shall include documentation sufficient to justify the request and independently evaluate the safety impacts.

To meet state and federal requirements, any Exception request must include documentation addressing all of the issues described in Sections 13.5.1 through 13.5.4:

13.5.1 Description
13.5.2 Safety Impacts
13.5.3 Benefit / Cost Assessment
13.5.4 Conclusion and Recommendation

The above information is to be attached in full and 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 flowcharts 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 Exception Scenarios on RRR Type Projects.
See “Exhibit F’ for Utility Exception Flowchart.
See “Exhibit G” for Generalized Location Decision Flowchart.
See “Exhibit H” for Project Type Location and Relocation Decision Flowcharts.
See “Exhibit I” for Control Zones.
See “Exhibit L” for Utility Liaison Process
See “Exhibit M“ for Determining Minimum HDD Depth

13.6 Concurrence Review of Exceptions

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

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

After all approval or concurrence signatures are obtained, the exception will be returned to the District Maintenance or Design Engineer, or responsible qualified licensed Florida professional engineer. A copy will be retained by the State Roadway Design Engineer.

EXHIBITS

FORM 710-010-61
UTILITIES
10/07

TO:[(a)] _____

DATE: _____

SUBJECT: UTILITY EXCEPTION

Financial Project ID: _____ **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

( )Clear Zone ( )MSE Walls

Describe the specific nature of the exception [(b)] below:

_____
_____
_____
_____
_____
_____

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

Approval / Recommended (FDOT)[(d)]: _____
District Design Engineer or Designee

Approval[(e), (g)] : _____ _____
Chief Engineer or Designee **FHWA Division Administrator**

Approval / Concurrence[(f) (h)]: _____ _____
State Structures Design Engineer or Designee **State Roadway Design Engineer or Designee**

(a) Exceptions on projects having full Federal oversight and involvement are addressed to the FHWA Division Administrator but sent to the District Design Engineer. All other exceptions are addressed and 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 UAM. 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 are approved by the District Design Engineer or Designee except on projects having full Federal oversight and involvement or projects that involve design speed or limited access R/W use. Projects having full federal oversight require a recommendation by the District Design Engineer or Designee 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 or Designee, except for design speed or for limited access R/W use (see note (g)).
(f) All exceptions require the concurrence of the State Roadway Design Engineer or Designee. Exceptions impacting the geometry, vertical clearance, layout of structures, or superstructure cross-slope require concurrence from the State Structures Design Engineer or Designee.
(g) Exceptions for limited access R/W use require approval by the Chief Engineer or Designee in addition to any approvals required by the FHWA.
(h) Exceptions for Utility accommodation within the vicinity of MSE walls require approval of the State Structures Design Engineer or Designee.

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 that may exist. For this reason it is not appropriate to say under certain conditions an exception will always be given. Similarly it cannot 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 R/W that the FDOT manages. The Utility shares the responsibility to maintain a safe user environment. The actions of either party can affect safety negatively or positively. Each party must begin its evaluations by first establishing 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. A description of exhibits for exceptions follows: Exhibit C describes what must be considered by the roadway engineer before denying or approving a utility exception. Exhibit D describes what a Utility must consider in justifying and requesting an exception. Exhibit E 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. Exhibit F is provided to ensure issues are addressed in the proper order in making a decision about approval or denial of an exception. Exhibit G provides guidance on determining the appropriate location of any utility facility within the R/W. Exhibit H is a series of three (3) project type location and relocation decision flowcharts. Exhibit I shows areas called control zones that require exceptions before an above ground fixed object may be placed in them.

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 five (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 R/W 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, State law or local ordinance?
(13) Are there existing clearance conflicts, 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 R/W to relocate within the R/W 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 four (4) feet or more, or behind a fixed barrier, this does not apply where there is an ADA non-compliance issue).
(6) Consider the following scenario. There is room to relocate the pole(s) without conflicts and there is no physical reason the Utility cannot 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 federal codes whether 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) When the FDOT project scope is an interim fix rather than the ultimate section.
(E) When compliance cannot 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) When significant safety improvements would not be attained by forcing a relocation offset of less than four (4) feet. (This does not apply where there is an ADA non-compliance issue).
(I) When 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) When adjustment or relocation of the facility would conflict with other acceptably located facilities.
(K) When insufficient R/W to comply.
(L) Other reasons will be considered on a case-by-case basis.

Scenarios for which Exceptions would typically be approved, when the existing utility facility is located within a control zone:

- When there is no crash history and the location meets the horizontal requirements based on the posted speed;
- When there is an established hardship;
- When there is no practical alternative (e.g., the utility facility cannot be moved more than four (4) feet); or
- 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 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 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 gives attention to the considerations of the design engineer. In this way both parties are not only addressing the minimums but also considering all issues together.

The assessment documentation is not required to contain, 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 four (4) feet would require a violation of ADA or National Electric Codes", or "moving back four (4) feet 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. All statements 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 (10) years later when a claim is brought forth.

To meet state and federal requirements, any 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, and relation to the exception element for the most recent five (5) 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, etc.
  - (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, workers 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" 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 that considers all factors important to the successful implementation of the FDOT'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).

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 increases in crash history and directly observable impact evidence. This exhibit describes scenarios and conditions that must exist for an exception to be approved. It also gives general conditions and probable recommendations for typical situations where extreme or unforeseen conditions do not exist. Where extreme or atypical circumstances exist, the District recommendation may not follow this example.

Scenarios for which exceptions would typically be approved, with and without crash history or impact evidence, follow:

If there is no documented crash history in the most recent five (5) 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 forty five (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 R/W.
- One Utility would have to relocate in order to put another in its position.
- The object cannot be relocated more than four (4) feet. (This does not apply where there is an ADA non-compliance issue).
- Relocation would cause a conflict with other state or national safety codes.
- A minimum of six (6) feet horizontal offset exists between the traveled way and the above ground fixed object.
- The relocation benefit/cost ratio is less than or equal to two (2).

If there is documented crash history in the most recent five (5) 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 exists.

- No practical design alternative.
- The relocation benefit/cost ratio is less than or equal to two (2).

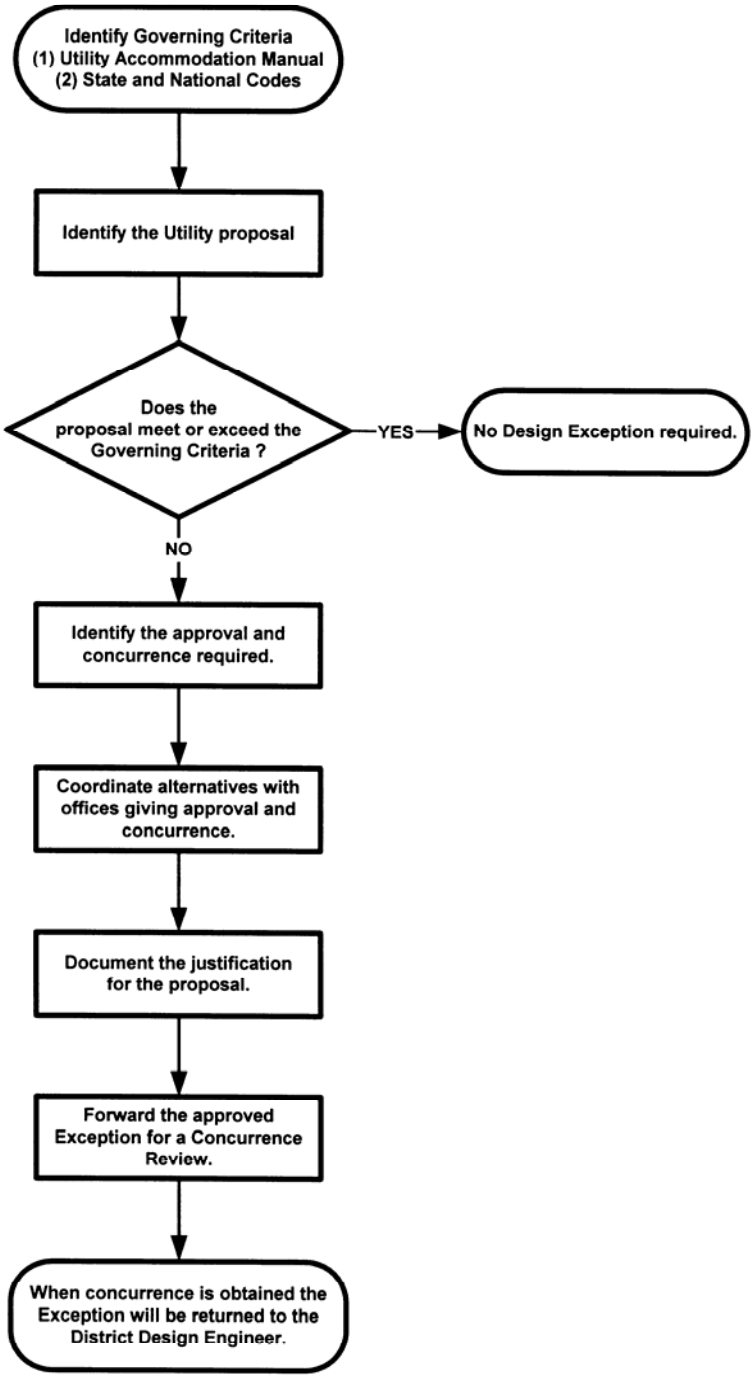
Scenarios for which Exceptions would typically be approved, when the existing utility facility is located within a control zone:

- When there is no crash history and the location meets the horizontal requirements based on the posted speed;
- When there is an established hardship;
- When there is no practical alternative (e.g., the utility facility cannot be moved more

than four (4) feet); or
- Other reasons will be considered on a case-by-case basis.

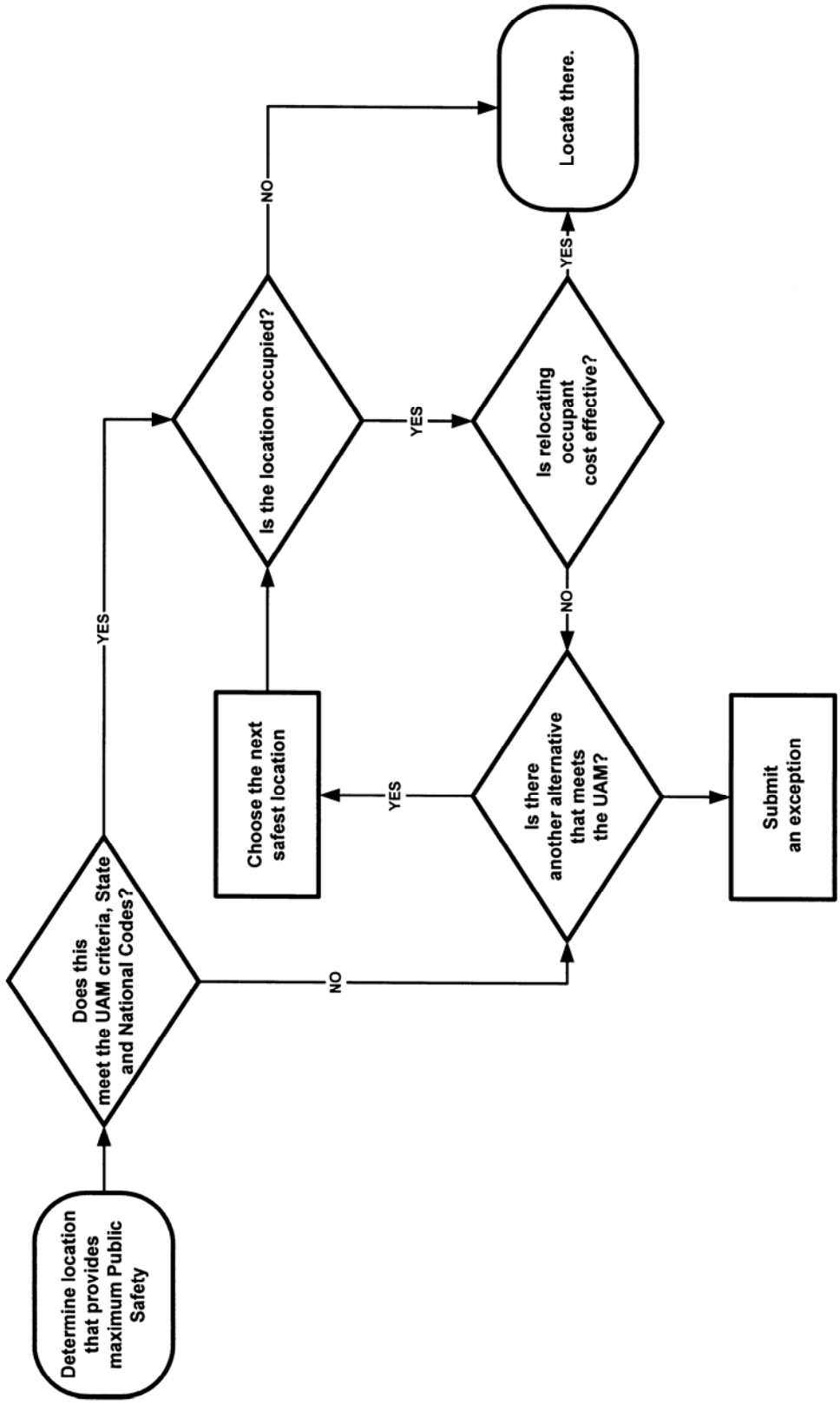
FOR PLACEMENT OF BELOW GROUND OBJECTS, MATERIALS, OR METHODS:
Exceptions are approved only by demonstration of a hardship. The hardship must be demonstrated by showing the FDOT policies, standards or criteria are inappropriate and supported by a benefit/ cost ratio of less than or equal to one (1). For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

Utility Exception Flow Chart



Generalized Location Decision Flow Chart

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



NEW POLE LOCATION - DECISION FLOW CHART

Note: while "Pole" is used in the flow chart, it is also intended to apply to any above ground fixed object.

New Poles must be evaluated against New Construction criteria: "As close as practical to the R/W line."
Anything less than Minimum Horizontal Clearance[3] requires an exception.

[1] If New pole set in conjunction with FDOT Road Project, see first the FDOT Road Project (Major Reconstruction) or RRR - Pole Relocation Decision Flow Chart, as appropriate.

[2] As close to the R/W 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.**

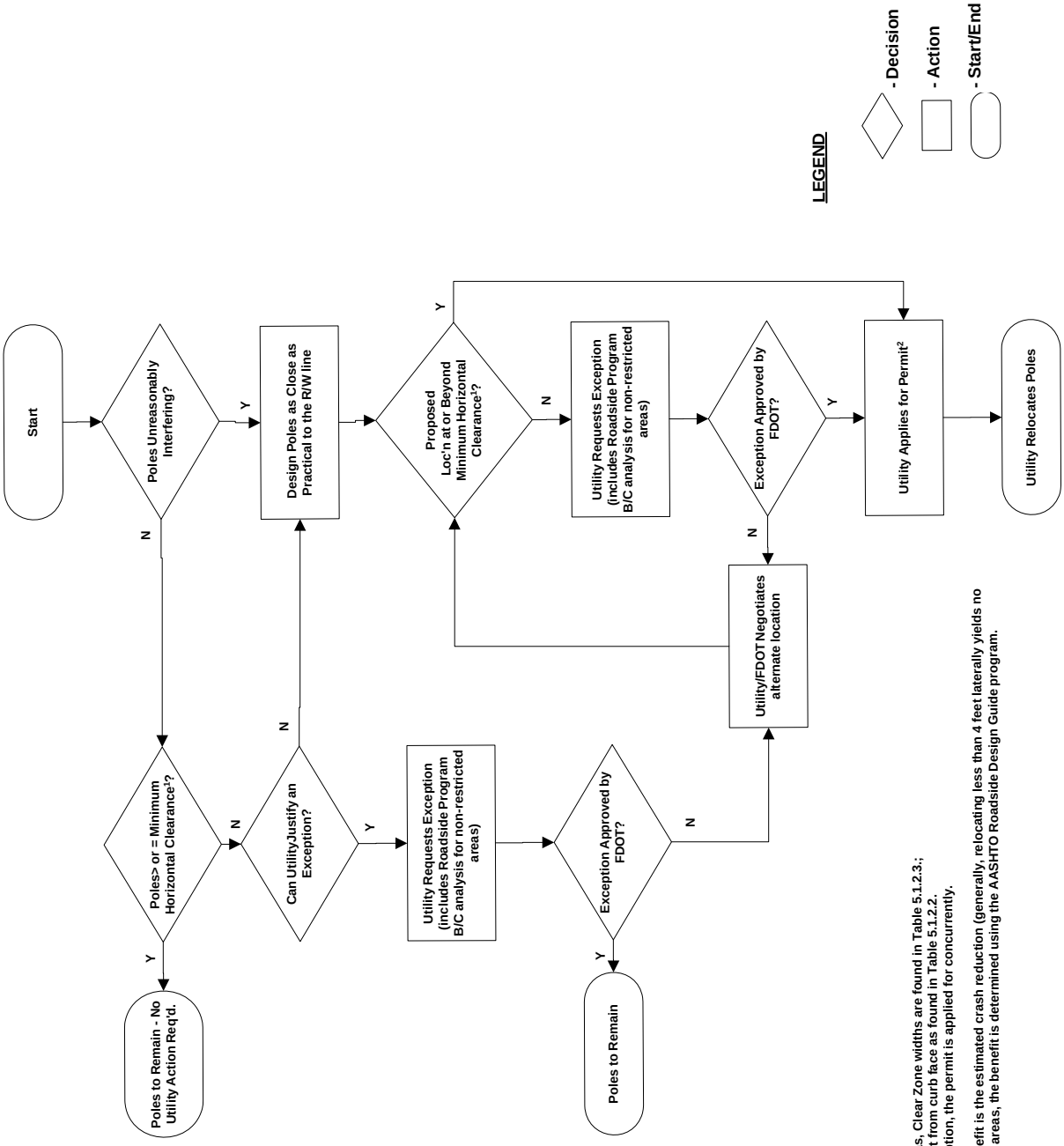
[3] For non-restricted R/W areas, Clear Zone Widths are found in Table 5.1.2.3.
- **For restricted **R/W areas, 4 feet from curb face as found in Table 5.1.2.2.**
- **For new midspan poles, use minimum RRR dimensions**
- **For new light poles use Table 5.1.2.1.**

[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 feet is no reduction). In Non-Restricted areas, benefit is determined using the AASHTO Roadside Design Guide program.**

FDOT ROAD PROJECT (MAJOR RECONSTRUCTION) - POLERELOCATION DECISION FLOW CHART

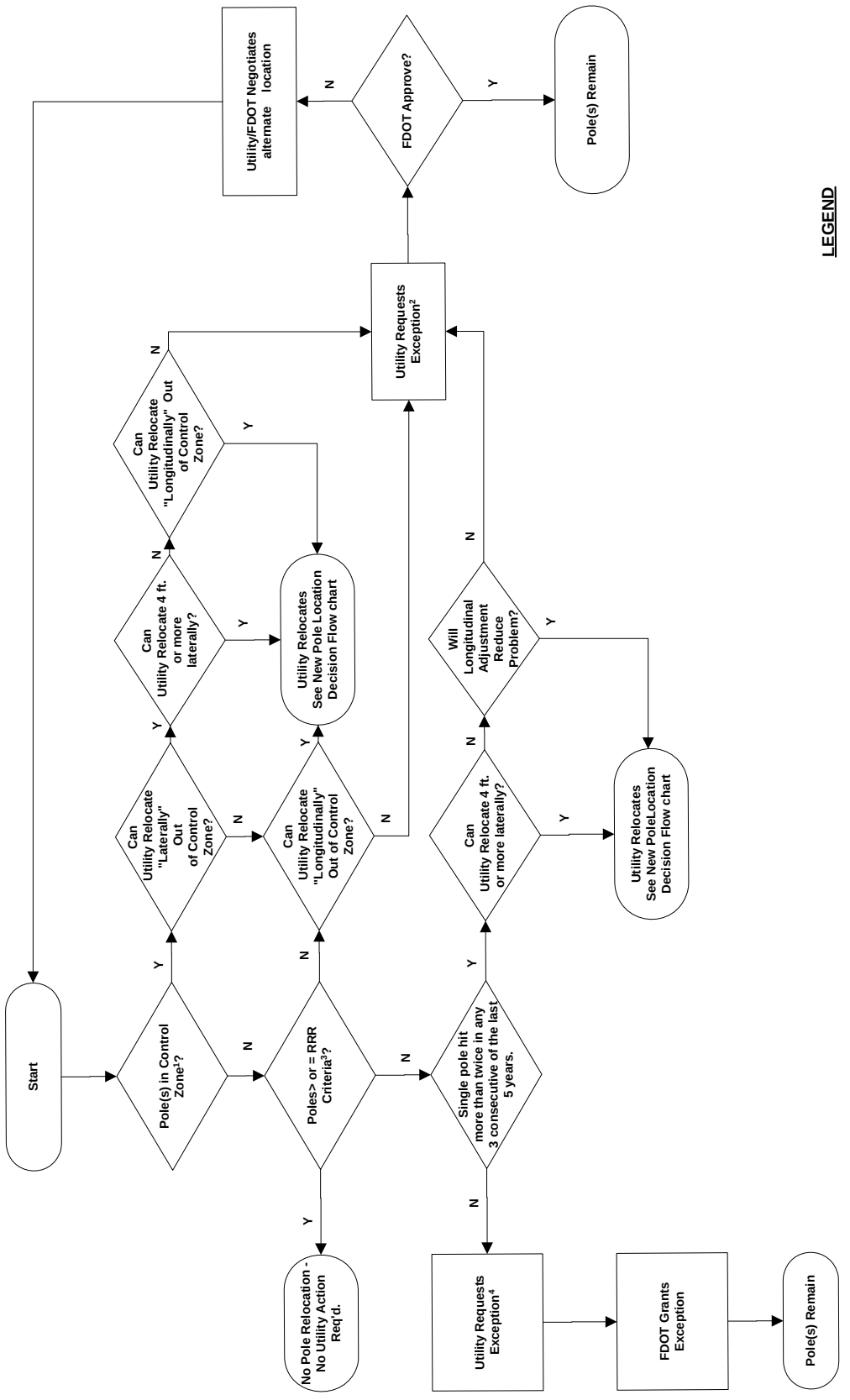
Note: While "pole" is used in Flow Chart, it is also intended to apply to any above ground fixed object.



1 For non-restricted R/W areas, Clear Zone widths are found in Table 5.1.2.3.;
- For restricted ** areas 4 feet 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 the benefit is the estimated crash reduction (generally, relocating less than 4 feet laterally yields no reduction). In Non-Restricted areas, the benefit is determined using the AASHTO Roadside Design Guide program.



[1] Control Zones Depicted in Exhibit I

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

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

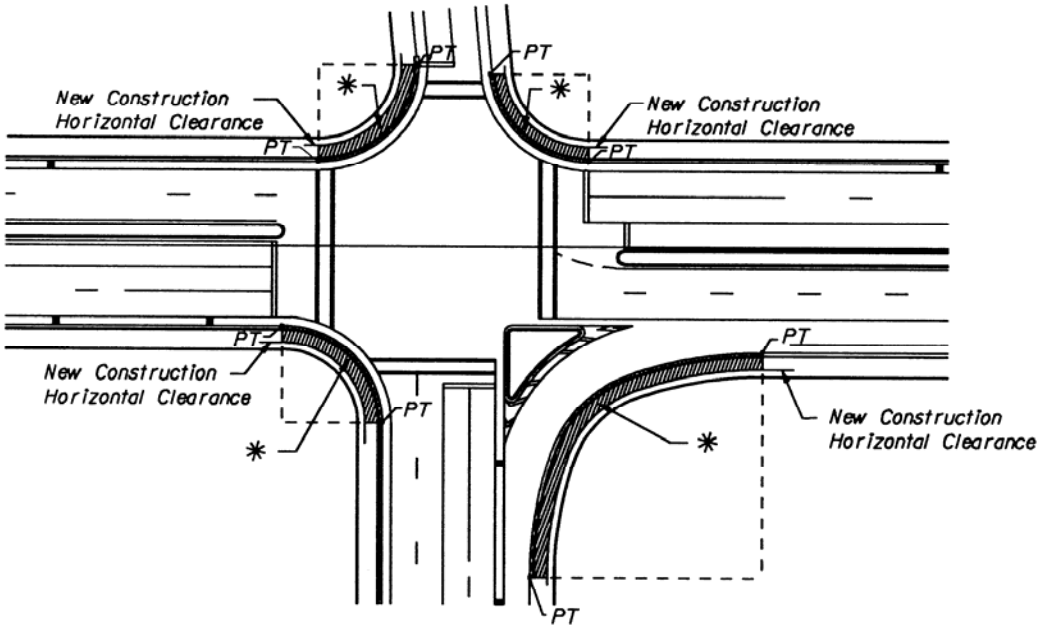
[4] Exception justified on basis that pole(s) not hit more than twice during any 3 consecutive years in the last 5 years.

** 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.

CONTROL ZONES

RESTRICTED LOCATIONS FOR ABOVE GROUND FIXED OBJECTS

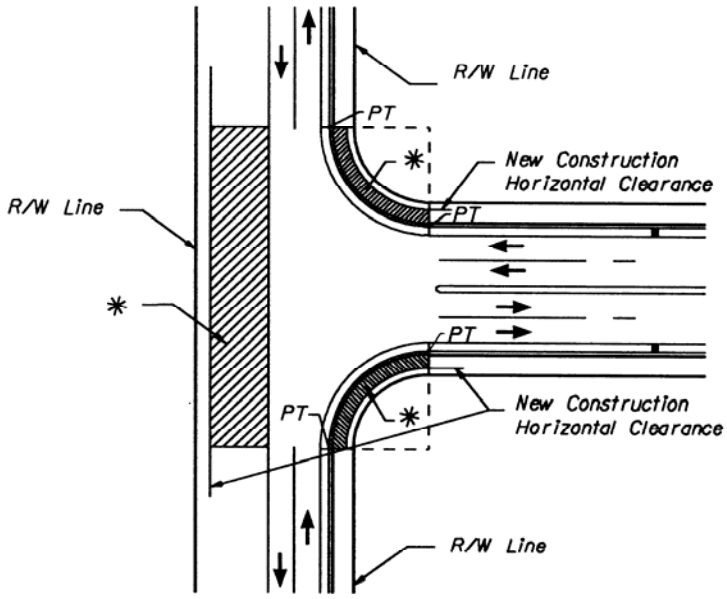
* No above ground fixed objects may be installed in shaded area unless behind barriers allowing for impact offset. No barriers shall be constructed solely for allowing above ground fixed objects to be located in the shaded areas.



Intersecting Streets

"Not To Scale"

* No above ground fixed objects may be installed in shaded area unless behind barriers allowing for impact offset. No barriers shall be constructed solely for allowing above ground fixed objects to be located in the shaded areas.



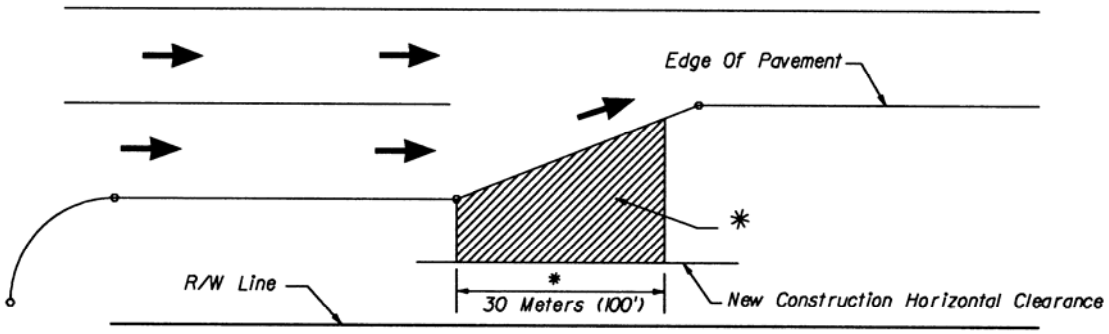
"T" Intersections

"Not To Scale"

CONTROL ZONES

RESTRICTED LOCATIONS FOR ABOVE GROUND FIXED OBJECTS

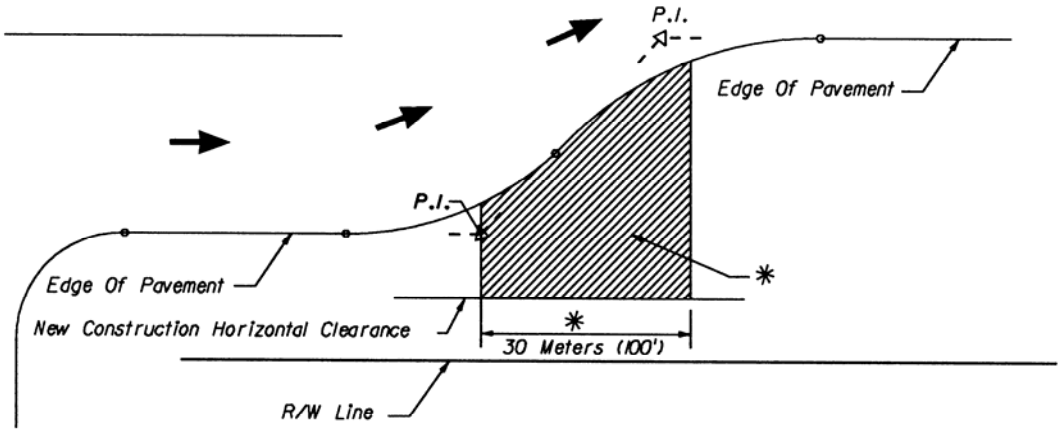
* *No above ground fixed objects may be installed in shaded area unless behind barriers allowing for impact offset. No barriers shall be constructed solely for allowing above ground fixed objects to be located in the shaded areas.*



Lane Termination Using A Skewed Merge Section

"Not To Scale"

* *No above ground fixed objects may be installed in shaded area unless behind barriers allowing for impact offset. No barriers shall be constructed solely for allowing above ground fixed objects to be located in the shaded areas.*



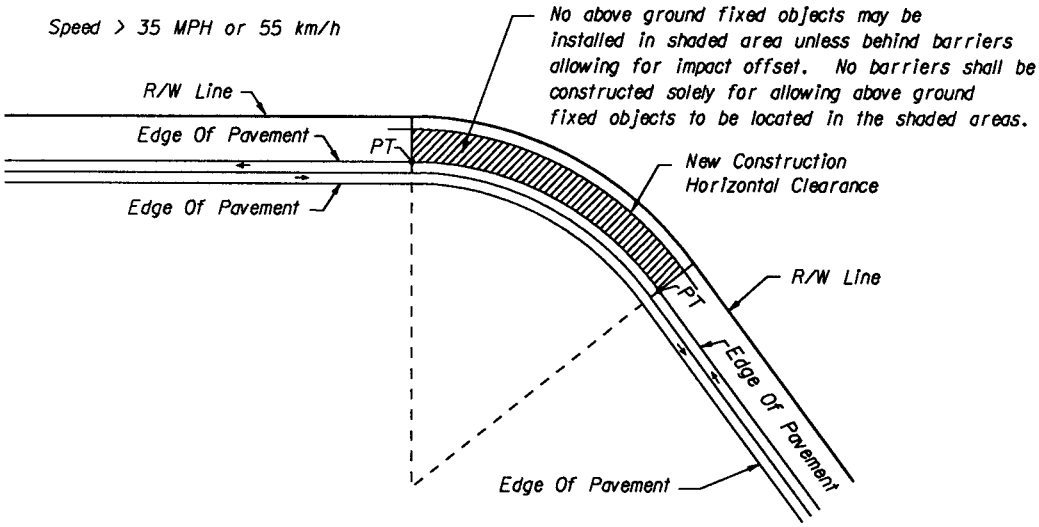
Lane Termination Using A Reverse Curve

"Not To Scale"

CONTROL ZONES

RESTRICTED LOCATIONS FOR ABOVE GROUND FIXED OBJECTS

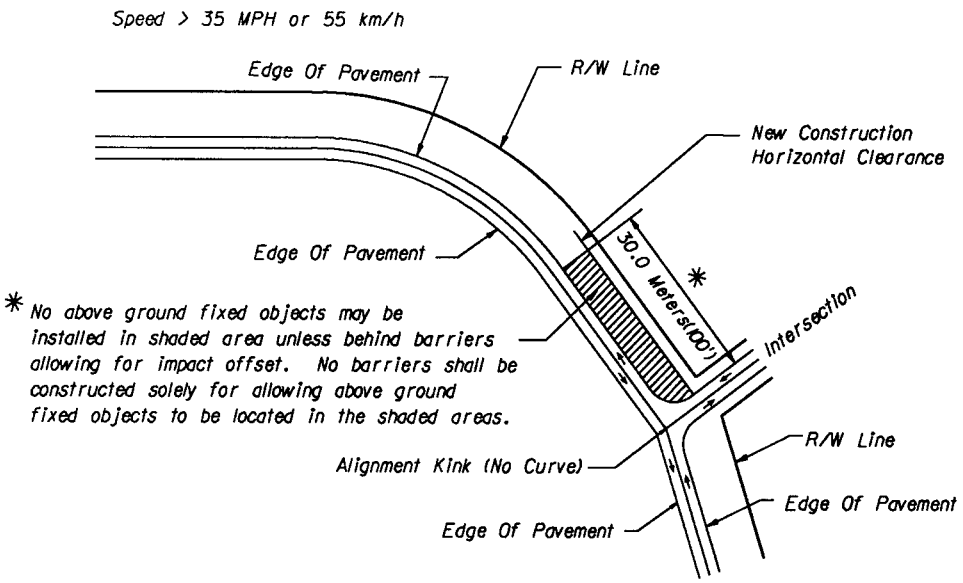
Existing Curb And Gutter Or Rural Typical Section With
No Change In Edge Of Pavement Or Existing Curb Location



Typical Curve

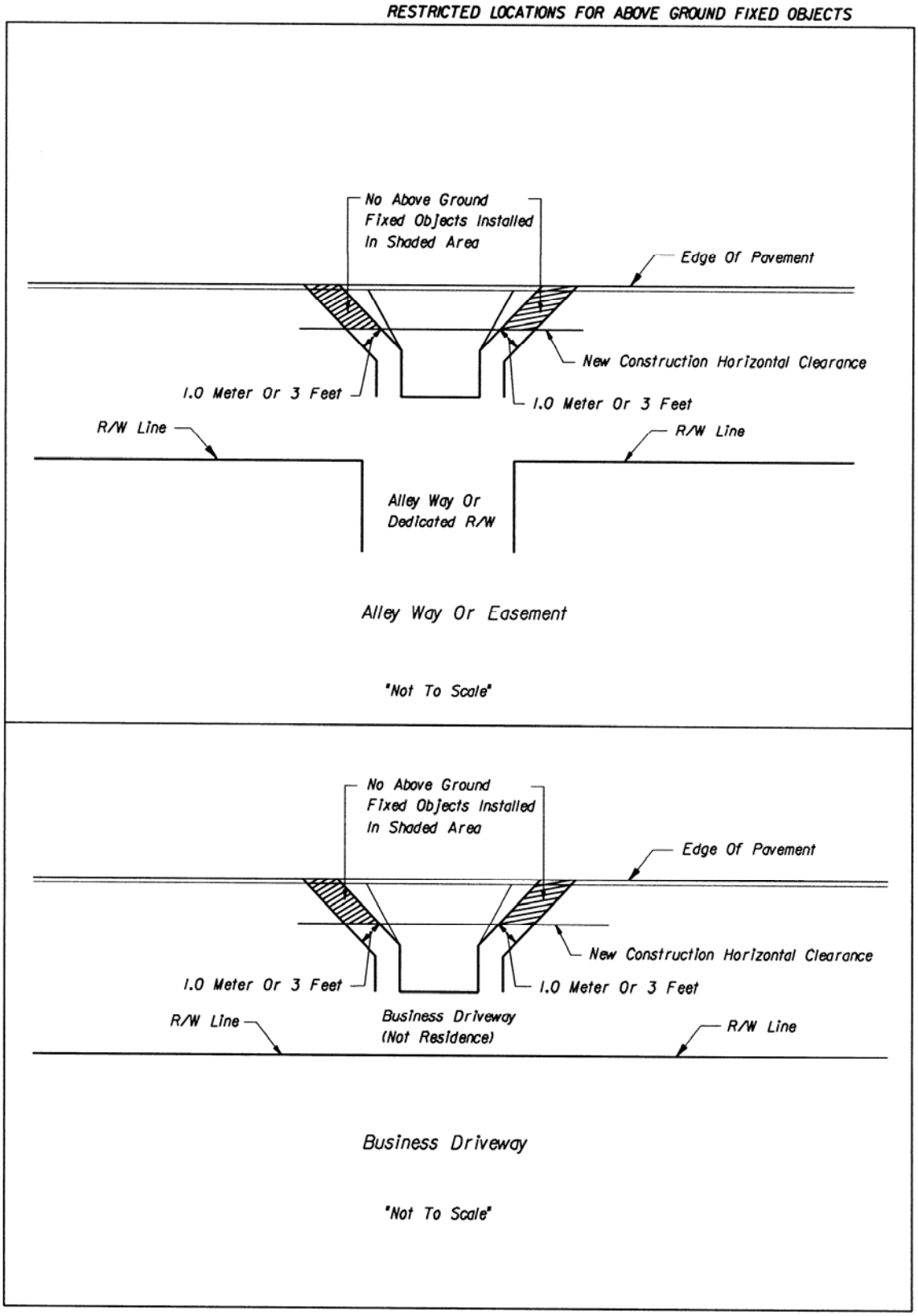
"Not To Scale"

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



Typical Kink In Alignment

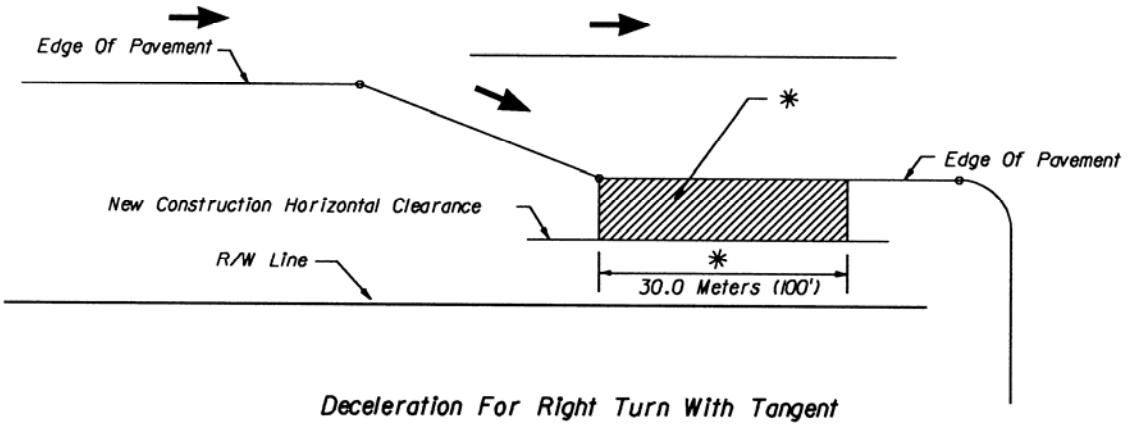
CONTROL ZONES



CONTROL ZONE

RESTRICTED LOCATIONS FOR ABOVE GROUND FIXED OBJECTS

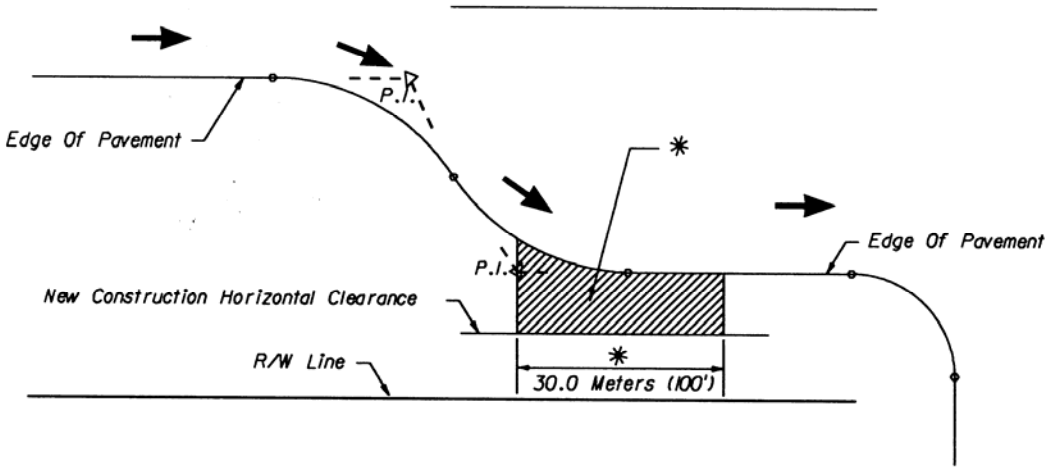
* No above ground fixed objects may be installed in shaded area unless behind barriers allowing for impact offset. No barriers shall be constructed solely for allowing above ground fixed objects to be located in the shaded areas.



Deceleration For Right Turn With Tangent

"Not To Scale"

* No above ground fixed objects may be installed in shaded area unless behind barriers allowing for impact offset. No barriers shall be constructed solely for allowing above ground fixed objects to be located in the shaded areas.



Deceleration For Right Turn With Reverse Curves

"Not To Scale"

FORM 710-010-85
UTILITIES
OGC – 10/07

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

UTILITY PERMIT

PERMIT NO.:	**SECTION NO.:**	**STATE ROAD**		**COUNTY**
FDOT construction is proposed or underway.		☐ **Yes**	☐ **No**	**Financial Project ID**:
Is this work related to an approved Utility Work Schedule?		☐ **Yes**	☐ **No**	**If yes, Document Number**:
PERMITTEE:				
ADDRESS:			**TELEPHONE NUMBER**: ( ) -	
CITY/STATE/ZIP:				

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 Company (Typed or Printed Legibly)	Contact Information Address/Telephone/E-Mail (If Applicable)	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 a minimum of forty eight (48) hours in advance 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 MOT is _____, Telephone Number _____. (This name may be provided at the time of the forty eight (48) hour advance 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 UAM 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 sixty (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 thirty (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 UAM. 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 R/W 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 MUTCD, 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 Design Standards, Indexes 600-670 and Standard Specifications for Road and Bridge Construction, Section 102, as amended by the UAM. 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 licensed Florida professional engineer qualified to develop TCP in accordance with the provisions of Chapter 8 of the UAM.
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 R/W as set forth above. Whenever the Permittee removes its facilities, it shall be at the Permittee's sole cost and expense. The Permittee, at its sole expense, shall promptly remove said out of service utilities whenever the FDOT determines said removal is in the public interest.
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. For any excavation, construction, maintenance, or support activities performed by or on behalf of the FDOT, within its R/W, the Permittee may be required by the FDOT or its agents to perform the following activities with respect to a Permittee's facilities: physically expose or direct the exposure of underground facilities, provide any necessary support to facilities and/or cover, de-energize or alter aerial facilities as deemed necessary for protection and safety.

FORM 710-010-85
UTILITIES
OGC – 10/07

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

UTILITY PERMIT

16. Pursuant to Section 337.401(2), Florida Statutes, the permit shall require the permit holder to be responsible for damage resulting from the issuance of the permit. The FDOT 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 Statutes, 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. The Permittee shall comply with all provisions of Chapter 556, Florida Statutes, Underground Facilities Damage Prevention and Safety Act except where modified by this permit, the UAM, or FDOT Agreement.
19. 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 perr conditions and special instructions.
20. Receipt of this permit acknowledges responsibility to comply with Section 119.07(3), Florida Statutes, and UAM Chapter 4.5.2, regarding Exempt Documents a Security System Plans Requests.
21. 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? ☐NO ☐ 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)	
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 UAM. 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

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION
UTILITY WORK SCHEDULE

Financial Project ID:	**Federal Project ID:**
County:	**State Road No.:**
District Document No:	
Utility Agency/Owner (UAO):	

A. Summary of Utility Work And Execution

NON-CONSTRUCTION ITEMS	ESTIMATED *CALENDAR DAYS	CONSTRUCTION ITEMS	ESTIMATED *CALENDAR DAYS
Total Preliminary		**Total Prior to FDOT Project Construction**	
Total Material Procurement		**Total During FDOT Project Construction**	
Total Right-of-Way Acquisition			
Total Other			

***Calendar Days=UAO Work Days X 7/5 and takes into consideration simultaneous activities listed on Part "C" of this Schedule.**

This document has been developed as the method for a Utility Agency/Owner (UAO) to transmit to the Florida Department of Transportation (FDOT), the FDOT's Contractor, and other right-of-way users, the location, relocation, adjustment, installation, and/or protection of their facilities, on this FDOT project. The following data is based on FDOT preliminary construction plans dated _____. Any deviation by the FDOT or its contractor from the plans, as provided, may render this work schedule null and void. Upon notification by FDOT of such change, this utility may require additional days for assessment and negotiation of a new work schedule. This UAO is not responsible for events beyond the control of the UAO that could not reasonably be anticipated by the UAO and which could not be avoided by the UAO with the exercise of due diligence at the time of the occurrence. The UAO agrees to notify the Department in writing prior to starting, stopping, resuming, or completing work.

UAO Project Representative: _____ Telephone Number: _____

UAO Field Representative: _____ Telephone Number: _____

This document is a printout of an FDOT form maintained in an electronic format and all revisions thereto by the UAO in the form of additions, deletions or substitutions are reflected only in an Appendix entitled "Changes to Form Document" and no change is made in the text of the document itself. Hand notations on affected portions of this document may refer to changes reflected in the above-named Appendix but are for reference purposes only and do not change the terms of the document. By signing this document, the UAO hereby represents that no change has been made to the text of this document except through the terms of the appendix entitled "Changes to Form Document".

You MUST signify by selecting or checking which of the following applies:

☐ No changes to forms document.
☐ Appendix "Changes to Forms Document" is attached. ___ Number of Attachment Pages.

Authorized Utility Agent:	****Engineer of Record (EOR):**	**Acceptance by District Utilities:**
(Signature)	**(Signature)**	**(Signature)**
(Printed Name)	**(Printed Name)**	**(Printed Name)**
(Title)	**(Title)**	**(Title)**
(Date)	**(Date)**	**(Date)**

(When requested by the District, the EOR will attest to compatibility of plans, specifications and Utility Work Schedule)**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

UTILITY WORK SCHEDULE

Financial Project ID:	**Federal Project ID:**
County:	**State Road No.:**
District Document No:	
Utility Agency/Owner (UAO):	

B.	**Special Conditions / Constraints**

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

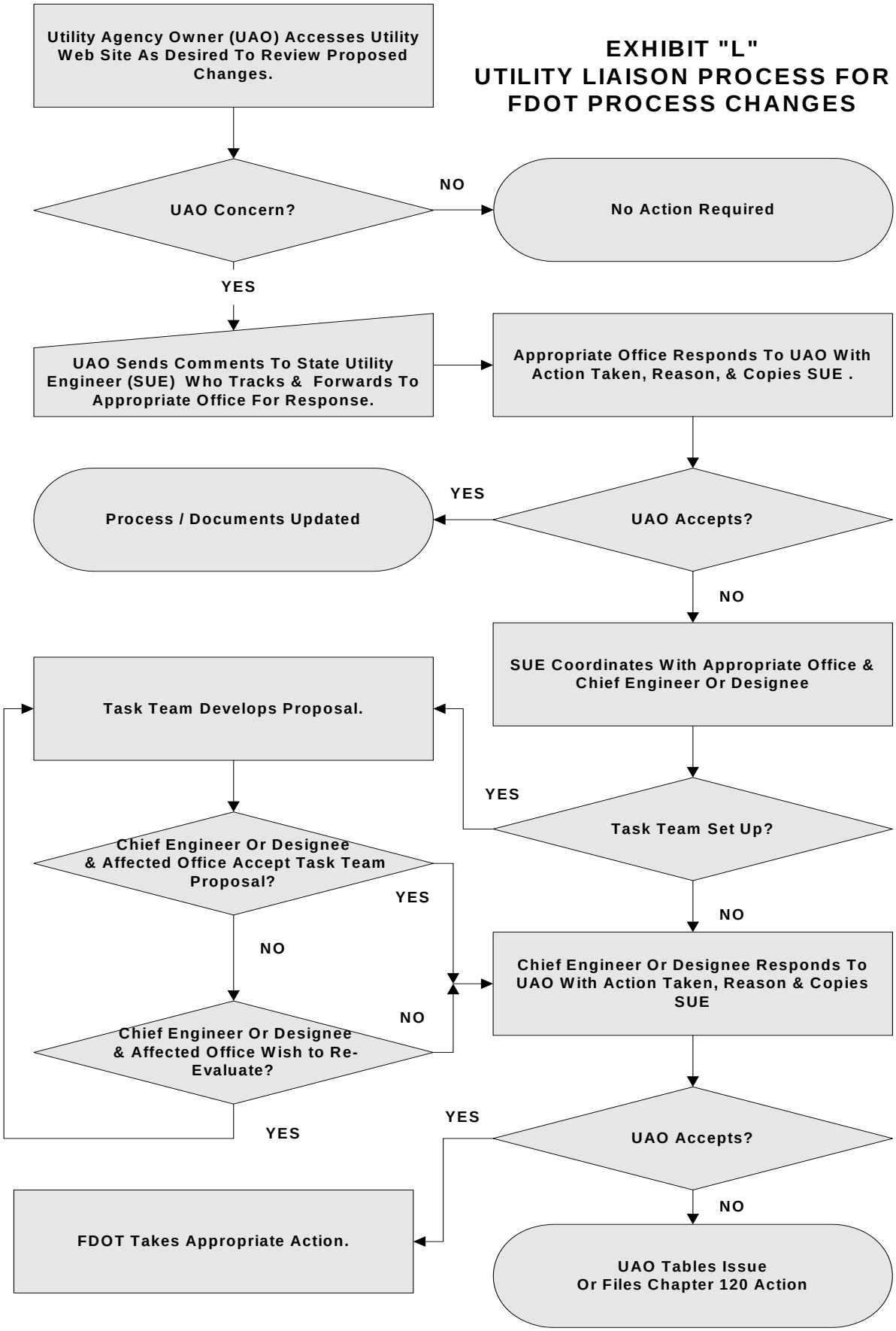
UTILITY WORK SCHEDULE

Financial Project ID:	**Federal Project ID:**
County:	**State Road No.:**
District Document No:	
Utility Agency/Owner (UAO):	

C. Disposition of Facilities (List All Existing & Proposed) on Project:

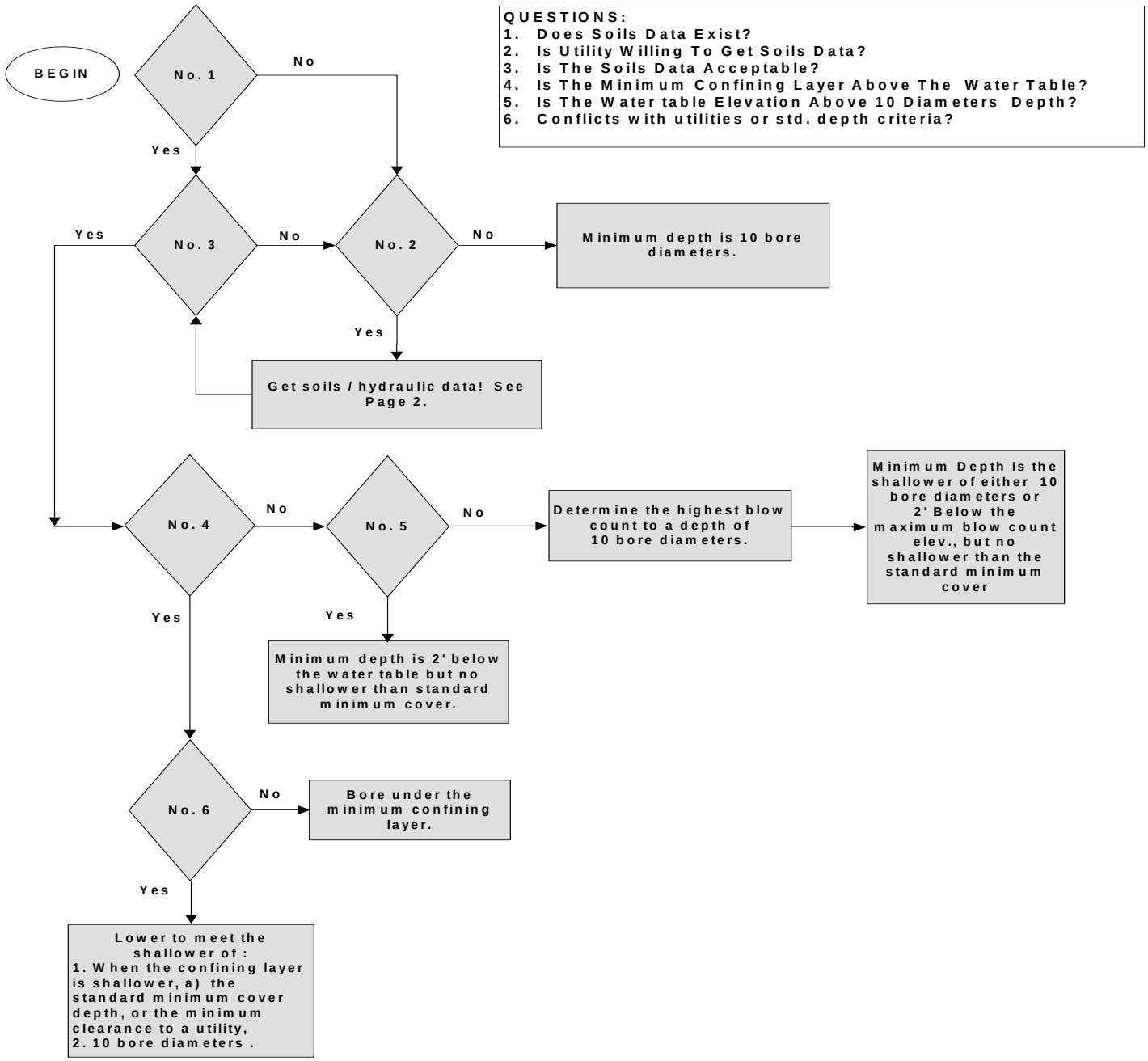
UTILITY FACILITIES BY STATUS/TYPE/SIZE/MATERIAL/OFFSET TO BASELINE FROM STA TO STA	DESCRIPTION OF UTILITY WORK	DEPENDENT ACTIVITIES	M.O.T. PHASE NUMBER	CONSECUTIVE CALENDAR DAYS

EXHIBIT "L"
UTILITY LIAISON PROCESS FOR FDOT PROCESS CHANGES

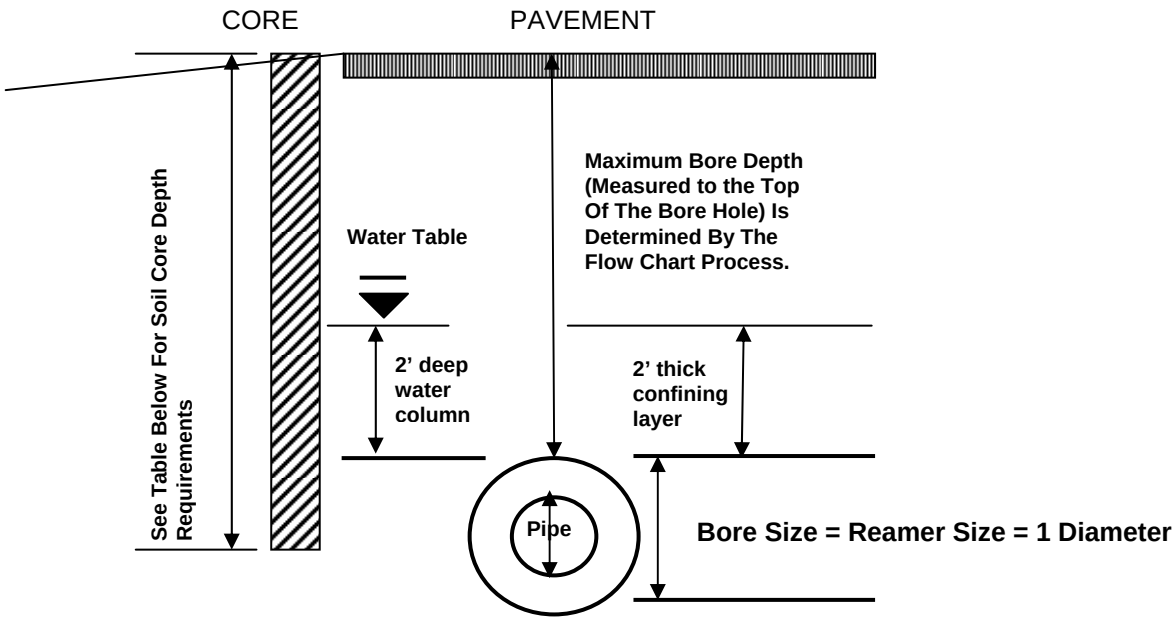


Determining The Minimum Depth For HDD Bores Greater Than 6" (Reamer Size)

Note: The minimum bore depth is never less than the standard minimum cover for utilities as defined in the UAM for the type of roadway the work is being performed on. (I. E., 36" standard, 48" Limited Access).



Determining The Minimum Depth For HDD Bores Greater Than 6” (Reamer Size)



Soils / Water Table Data Requirements & Definitions

Minimum Required Content of Soils Data

- Blow Count Using Std. Penetration Test
- Normal Water Table Depth*
- Soils Classification

* A water Table higher than the Normal Water Table may be used if it exists at the actual time of the bore.

Definition of Minimum Acceptable Water Table

- A 2’ water column must exist above the top of the bore. NOTE: This is not the same as a 4” water column being two feet above the top of the bore if it is perched.

Minimum Soil Core Depth Shall Be The Lesser Of:

- Not less than 8 feet
- 2’ Below The Normal Water Table
- 10 Bore Diameters If Reached Before Water Table Or Confining Layer Depth.
- 2’ Below Confining Layer Depth.

Definition of Acceptable Soil Confining Layer

- Minimum 2’ thick layer that sustains 30 blows/ft using standard penetration test

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

EXEMPT DOCUMENTS / SECURITY SYSTEM PLAN DISTRIBUTION FORM

Exempt Documents being requested or received are included in those exempt from public disclosure as provided by Section 119.07(3), Florida Statutes (Attached). **Security System Plans** being requested are confidential and exempt as provided by Section 119.071, Florida Statutes (Attached). The Exempt Documents relate to work being performed for or required by the Florida Department of Transportation, or work related to the Department's structures. The following information is being provided as a record of this request or receipt, and distribution of the Exempt Documents or Security System Plans.

Completion of this form and a signature is required before information will be released (* Means Required To Obtain Security System Plans):

A. Entity Requesting/Receiving Documents: (Check All That Apply and Provide Full Name of Entity.)

☐ **State Agency*** _____
☐ **Federal Agency*** _____
☐ **Governmental** _____
☐ **Architect** _____
☐ **Engineer:** _____
☐ **Contractor** _____
☐ **Other:** _____

B. Entity address & phone number:

Address: _____
Phone: _____ _____

C. Federal ID of Organization requesting/receiving (If applicable): _____

D. Exempt Documents / Security Systems Plans requested or provided: (Be specific on what is requested or provided, and include description, project numbers, FIN, contract numbers, etc.)

_____

E. Reason for Request/Intended Use: _____

F. RECIPIENT CERTIFICATION: I, personally, and/or as representative of the above entity, fully understand (check the applicable certification block)

☐ the exempt nature of the Exempt Documents I am receiving and agree to maintain the exempt status of this information in accordance with Florida law
☐ the confidential and exempt nature of the Security System Plans I am receiving and Agree to maintain the confidential and exempt status of these Security System Plans in accordance with Florida law.

G. Name of person receiving Exempt Documents / Security Plans: (Printed): _____
Signature: _____ Date: _____

H. Driver license or photo identification number of recipient: _____
(Recipient must provide verification of employment with the above entity and verify identity with photo ID)

I. FDOT Employee Or Other Individual Providing Exempt Documents Or Security Plans:

FDOT Office: _____ Employee Name: _____
Other Individual Name: _____
Name and Office Address of Employer: _____

Exempt Documents / Security Systems Plans provided if different than requested: (Be specific on what is provided, and include description, project numbers, FIN, contract numbers, etc.)

_____

Signature of Person Authorizing Distribution: _____ Date: _____

Provider's Signature (if different than person authorizing distribution): _____

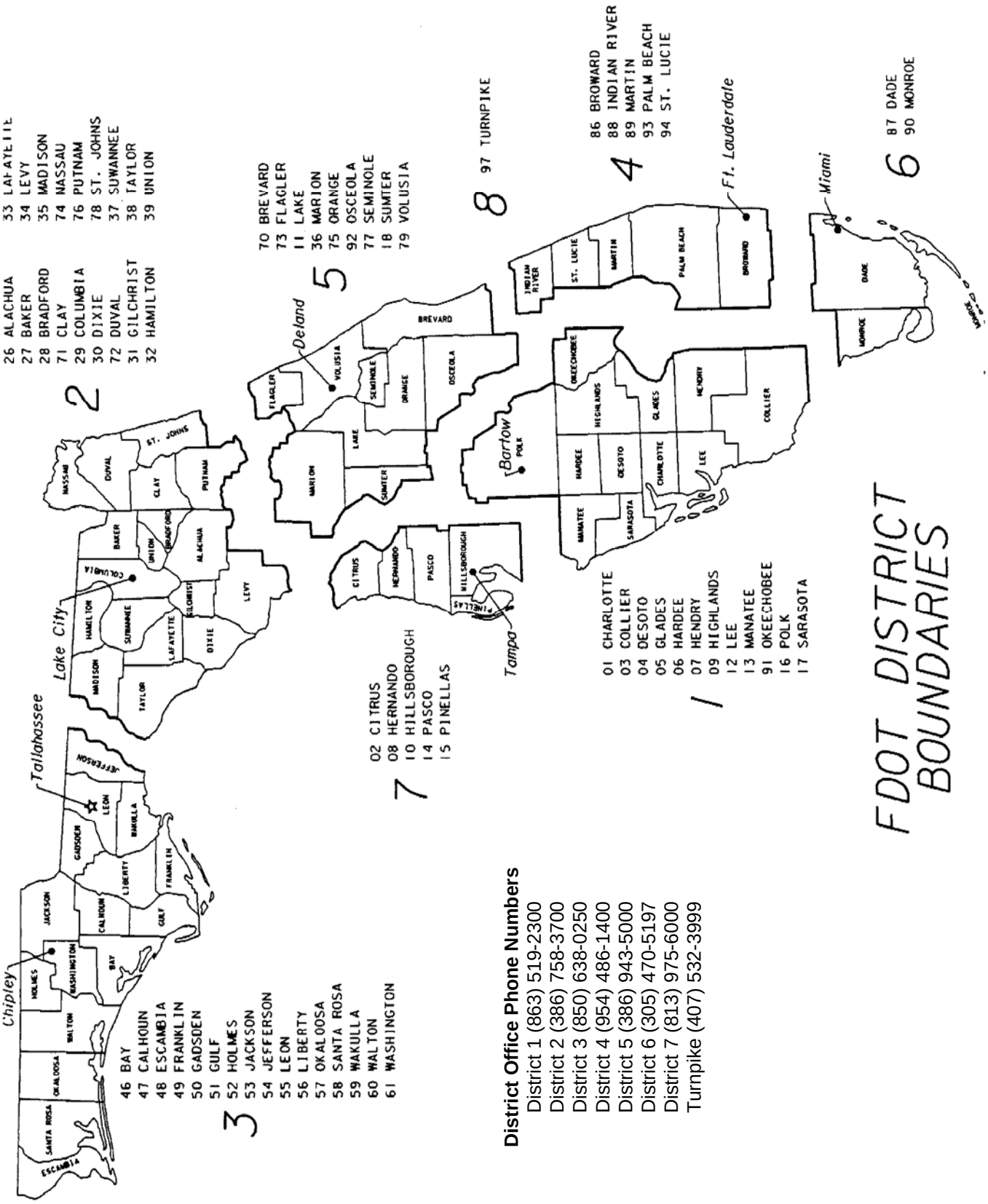
J. Method of delivery: _____ Pick-up by requestor _____ other (specify other method of delivery)
Date Provided: _____

EXEMPT DOCUMENTS - Section 119.07(3), Florida Statutes, provides:
119.07 Inspection, examination, and duplication of records; exemptions.-- (3)(ee) Building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a building, arena, stadium, water treatment facility, or other structure owned or operated by an agency as defined in s.119.011 are exempt from the provisions of subsection (1) and s. 24(a), Art. I of the State Constitution. This exemption applies to building plans, blueprints, schematic drawings, and diagrams, including draft, preliminary, and final formats, which depict the internal layout and structural elements of a building, arena, stadium, water treatment facility, or other structure owned or operated by an agency before, on, or after the effective date of this act. Information made exempt by this paragraph may be disclosed to another governmental entity if disclosure is necessary for the receiving entity to perform its duties and responsibilities; to a licensed architect, engineer, or contractor who is performing work on or related to the building, arena, stadium, water treatment facility, or other structure owned or operated by an agency; or upon a showing of good cause before a court of competent jurisdiction. The entities or persons receiving such information shall maintain the exempt status of the information.

SECURITY SYSTEM PLAN - ***Section 119.071, Florida Statutes, provides:***

> ***119.071 General exemptions from inspection or copying of public records. -- A security system plan or portion thereof for:***
> ***(1) Any property owned by or leased to the state or any of its political subdivisions; or***
> ***(2) Any privately owned or leased property***

which plan or portion thereof is in the possession of any agency, as defined in s. 119.011, is confidential and exempt from the provisions of s. 119.07(1) and s. 24(a), Art. I of the State Constitution. As used in this section, the term a "security system plan" includes all records, information, photographs, audio and visual presentations, schematic diagrams, surveys, recommendations, or consultations or portions thereof relating directly to the physical security of the facility or revealing security systems; threat assessments conducted by any agency as defined in s. 119.011 or any private entity; threat response plans; emergency evacuation plans; sheltering arrangements; or manuals for security personnel, emergency equipment, or security training. This exemption is remedial in nature and it is the intent of the Legislature that this exemption be applied to security system plans received by an agency before, on, or after the effective date of this section. Information made confidential and exempt by this section may be disclosed by the custodial agency to another state or federal agency to prevent, detect, guard against, respond to, investigate, or manage the consequences of any attempted or actual act of terrorism, or to prosecute those persons who are responsible for such attempts or acts, and the confidential and exempt status of such information shall be retained while in the possession of the receiving agency. This section is subject to the Open Government Sunset Review Act of 1995, in accordance with s. 119.15, and shall stand repealed on October 2, 2006, unless reviewed and saved from repeal through reenactment by the Legislature.



District Office Phone Numbers

District 1 (863) 519-2300
District 2 (386) 758-3700
District 3 (850) 638-0250
District 4 (954) 486-1400
District 5 (386) 943-5000
District 6 (305) 470-5197
District 7 (813) 975-6000
Turnpike (407) 532-3999

REFERENCES

"The following references are incorporated into this Rule by reference. The extent to which the below items (specifications, procedures, standards, policies) 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 UAM, and is subject to any modifications, exceptions, or qualifications set forth in the UAM."

National References:

1. *A Policy on Accommodation of Utilities Within Freeway R/W*, Prepared by the American Association of State Highway and Transportation Officials Standing Committee on Highways, February 1989.
2. 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.
3. *Roadside Design Guide*, Published by the American Association of State Highway and Transportation Officials, 2002.
4. *Manual on Uniform Traffic Control Devices*, incorporated by reference under Rule 14-15.010, F.A.C.
5. AASHTO Design Specification, *Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals, 4th Edition, with 2002, 2003, and 2006 Interims.*
6. American Petroleum Institute Standard 1104, 20th Edition, November 2005.
7. AASHTO Publication "*A Policy on Geometric Design of Highways and Streets*", 2004 edition.
8. FHWA Technical Advisory entitled "*Motor Vehicle Accident Costs*", dated October 31, 1994.

State References:

1. *FDOT Standard Specifications for Road and Bridge Construction*, 2007. Effective January 01, 2007.
2. *FDOT Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System*, January 2006.

PREFACE - APPENDIX A

This Appendix A contains standard specifications from the Department's 2007 Standard Specifications for Road and Bridge Construction that supplement the requirements found in this UAM for utility restoration and certain other utility operations deemed necessary to preserve the condition of the R/W. Should the particular conditions in the field indicate that the standard specifications contained in this Appendix A are insufficient to restore FDOT R/W to the condition existing prior to utility work and that a standard specification not contained within this Appendix A is absolutely necessary to restore FDOT R/W to the condition existing prior to utility work, such standard specification shown in the Department's 2007 Standard Specifications for Road and Bridge Construction, Division II (Sections 100-715), and Division III (Sections 901-925), will be prescribed by FDOT. To the extent it is possible to do so, such standard specification shall be identified on the permit, so adjustments to the utility work can be made by the utility. The Standard Specifications for Road and Bridge Construction, Division II (Sections 100-715), and Division III (Sections 901-925), can be found on FDOT's website at http://www.dot.state.fl.us/specificationsoffice/2007BK/TOC.htm.

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SECTION 4
SCOPE OF THE WORK

4-3.8 Changes Affecting Utilities: The Contractor shall be responsible for identifying and assessing any potential impacts to a utility that may be caused by the changes proposed by the Contractor, and the Contractor shall at the time of making the request for a change notify the Department in writing of any such potential impacts to utilities.

Department approval of a Contractor proposed change does not relieve the Contractor of sole responsibility for all utility impacts, costs, delays or damages, whether direct of indirect, resulting from Contractor initiated changes in the design or construction activities from those in the original Contract Specifications, design plans (including traffic control plans) or other Contract Documents and which effect a change in utility work different from that shown in the utility plans, joint project agreements or utility relocation schedules.

SECTION 7
LEGAL REQUIREMENTS AND RESPONSIBILITY TO THE PUBLIC

7-11.6 Utilities: Applies Only On FDOT Construction Projects.

This specification was written to instruct an FDOT Contractor and the Utility in the coordination of work which may involve utility facilities. The following are excerpts which identifies Utility and Department related responsibilities.

7-11.6.1 Arrangements for Protection or Adjustment: Do not commence work at points where the construction operations are adjacent to utility facilities or other property, until making arrangements with the utility facilities to protect against damage that might result in expense, loss, disruption of service, or other undue inconvenience to the public or to the owners. The Contractor is solely and directly responsible to the owners and operators of such properties for all damages, injuries, expenses, losses, inconveniences, or delays caused by the Contractor's operations.

The Department will make the necessary arrangements with utility owners for removal or adjustment of utilities where the Engineer determines that such removal or adjustment is essential to the performance of the required construction. The Department will not consider relocation or adjustment requests based on the Contractor's proposed use of a particular method of construction or a particular type of equipment as essential to the construction of the project if the Contractor could use other common methods and equipment without relocating or adjusting the utility. The Engineer will determine the responsibility for any such required adjustments of utilities. The Contractor shall make all requested relocations or adjustments because of delivery to the job site of Contractor-furnished materials, at no expense to the Department.

The Department considers relocations and adjustments (or other protection) under the following circumstances as essential to the construction of the project:

(1) Utilities lying within the vertical and horizontal construction limits, plus the reasonably required working room necessary for operation of equipment normally used for the particular type of construction, all as determined by the Engineer (and except as provided in paragraph (4) below). (In the case of overhead electrical conductors that carry more than 400 V, a minimum of 10 feet clearance between the conductor and the nearest possible approach of any part of the equipment is required, except where the utility owner effects safeguards approved by OSHA.)

(2) Utilities lying within the horizontal limits of the project and within 12 inches below the ground surface or the excavation surface on which the Contractor operates construction equipment, or within 12 inches below the bottom of any stabilizing course specified in the plans.

(3) Utilities lying within the normal limits of excavation for underground drainage facilities or other structures (except as provided in paragraph (4) below). Such normal limits shall extend to side slopes along the angle of repose, as established by sound engineering practice, unless the Contract Documents require support of the excavation sides by sheeting or the Contractor elects to sheet such excavation for his own convenience.

(4) Where utilities cross pipe trenches transversely within the excavation area, but not within positions from which relocation or removal is necessary, the utility owner is responsible for providing and effecting all reasonable measures for their support and protection during construction operations. Cooperate with the utility owner in the owner’s effecting of such support and protective measures. The Contractor is responsible for all damage to the utility that is caused by the Contractor's neglect or failure to cooperate or to use proper precaution in performing his work.

In the event that a temporary relocation of a utility or a particular sequence of timing in the relocation of a utility is necessary, the Engineer will direct such relocation so as to cause the least impediment to the overall construction operations. The Department is not responsible for utility adjustments or temporary relocation work, or for the conditions resulting therefrom, where such adjustments are (1) not necessitated by the construction of the project, (2) done solely for the benefit or convenience of the utility owner or its contractor, or the highway contractor where the Department considers his construction procedures to be other than normal, or (3) not shown on the approved plans for the utility relocation or the construction of the project.

7-11.6.2 Cooperation with Utility Owners: Cooperate with the owners of all underground or overhead utility lines in their removal and rearrangement operations in order that these operations may progress in a reasonable manner, that duplication or rearrangement work may be reduced to a minimum, and that services rendered by the utility owners will not be unnecessarily interrupted.

In the event of interruption of water or other utility services as a result of accidental breakage, exposure, or lack of support, promptly notify the proper authority and cooperate with the authority in the prompt restoration of service. If water service is interrupted and the Contractor is performing the repair work, the Contractor shall work continuously until the service is restored. Do not begin work around fire hydrants until the local fire authority has approved provisions for continued service.

7-11.6.3 Utility Adjustments: Certain utility adjustments and reconstruction work may be underway during the progress of the Contract. Cooperate with the various utility construction crews who are maintaining utility service. Exercise due caution when working adjacent to relocated utilities. The Contractor shall repair all damage to the relocated utilities resulting from his operations at no expense to the Department. The requirements of 7-11.1 and 7-11.6.2 outline the Contractor's responsibility for of protecting utility facilities. The Department will include in the Contract the utility authorities who are scheduled to perform utility work on the project.

7-11.6.4 Weekly Meetings: Conduct weekly meetings on the job site with all the affected utility companies and the Engineer in attendance to coordinate project construction and utility relocation. Submit a list of all attendees one week in advance to the Engineer for approval.

Provide the approved Work Progress Schedule and Work Plan for the project, as specified in 8-3.2, to document the schedule and plan for road construction and utility adjustments.

When utility relocations no longer affect construction activities, the Contractor may discontinue the meetings with the Engineer's approval.

SECTION 102 MAINTENANCE OF TRAFFIC

102-1 Description.

Maintain traffic within the limits of the project for the duration of the construction period, including any temporary suspensions of the work. Construct and maintain detours. Provide facilities for access to residences, businesses, etc., along the project. Furnish, install and maintain traffic control and safety devices during construction. Furnish and install work zone pavement markings for maintenance of traffic in construction areas. Provide any other special requirements for safe and expeditious movement of traffic specified on the plans. Maintenance of Traffic includes all facilities, devices and operations as required for safety and convenience of the public within the work zone.

102-2.1 Temporary Traffic Control Devices: Use only the materials meeting the requirements of Section 990, Design Standards and the MUTCD.

102-7 Traffic Control Officer.

Provide uniformed law enforcement officers, including marked law enforcement vehicles, to assist in controlling and directing traffic in the work zone when the following types of work is necessary on projects:

1. Traffic control in a signalized intersection when signals are not in use.
2. When Standard Index no. 619 is used on Interstate at nighttime and required by the plans.
3. When pacing/rolling blockade specification is used.

102-8 Driveway Maintenance.

102-8.1 General: Ensure that each residence and or business has safe, stable, and reasonable access.

102-8.2 Construction Methods: Place, level, manipulate, compact, and maintain the material, to the extent appropriate for the intended use.

As permanent driveway construction is accomplished at a particular location, the Contractor may salvage and reuse previously placed materials that are suitable for reuse on other driveways.

102-9 Temporary Traffic Control Devices.

102-9.1 Installation and Maintenance: Install and maintain adequate traffic control devices, warning devices and barriers to protect the traveling public and workers, and to safeguard the work area. Erect the required traffic control devices, warning devices and barriers to prevent any hazardous conditions and in conjunction with any necessary traffic re-routing. Use only those devices that are included on the Qualified Products List (QPL). Specific requirements for Maintenance of Traffic devices, additional to the requirements of this Section, are contained in the 600 series of the Design Standards. Immediately remove, turn or cover any devices or barriers that do not apply to existing conditions.

All QPL approved safety devices must meet the requirements of National Cooperative Highway Research Report 350 (NCHRP 350) and current FHWA directives. Manufacturers seeking evaluation must furnish certified test reports showing that their product meets all test requirements set forth by NCHRP 350.

Keep traffic control devices, warning devices, safety devices and barriers in the correct position, properly directed, clearly visible and clean, at all times. Immediately repair, replace or clean damaged, defaced or dirty devices or barriers.

102-9.2 Work Zone Signs: Provide signs in accordance with the plans and Design Standards. Meet the requirements of 700-2.5 and 700-5.5

Note: The Utility will construct and maintain detours, and provide pavement markings when called for in the Traffic Control Plan or when necessary to provide safe and expeditious movement of traffic.

SECTION 121 FLOWABLE FILL

121-1 Description.

Furnish and place Flowable Fill as an alternative to compacted soil as approved by the Engineer. Applications for this material include, beddings, encasements, closures for tanks, pipes, and general backfill for trenches.

121-2 Materials.

Meet the following requirements: Fine Aggregate*..... Section 902 Portland Cement (Types I, II, or III)..... Section 921 Fly Ash, Slag and other Pozzolanic Materials ..... Section 929 Air Entraining Admixtures** ..... Section 924 Water..... Section 923 *Any clean fine aggregate with 100% passing a 3/8 inch mesh sieve and not more than 15% passing a No. 200 sieve may be used.

**High air generators or foaming agents may be used in lieu of conventional air entraining admixtures and may be added at jobsite and mixed in accordance with manufacturers recommendation.

121-3 Mix Design.

Flowable Fill is a mixture of portland cement, fly ash, fine aggregate, air entraining admixture and water. Flowable fill contains a low cementitious content for reduced strength development. Submit mix designs to the Engineer for approval. The following are suggested mix guides for excavatable and non-excavatable flowable fill:

	Excavatable	Non-Excavatable
Cement Type 1	75-100 lb/yd^3	75-150 lb/yd^3
Fly Ash	None	150-600 lb/yd^3
Water	*	*
Air**	5-35%	5-15%
28 Day Compressive Strength**	Maximum 100 psi	Minimum 125 psi
Unit Weight (Wet)**	90-110 lb/yd^3	100-125 lb/yd^3

*Mix designs shall produce a consistency that will result in a flowable self-leveling product at time of placement. **The requirements for percent air, compressive strength and unit weight are for laboratory designs only and are not intended for jobsite acceptance requirements. Fine Aggregate shall be proportioned to yield 1 yd^3.

121-4 Production and Placing.

Use flowable fill manufactured at a production facility that meets the requirements of 347-3.

Deliver flowable fill using concrete construction equipment. Revolution counter are waived. Place flowable fill by chute, pumping or other methods approved by the Engineer. Tremie flowable fill through water.

121-5 Construction Requirements.

Use straps, soil anchors or other approved means of restraint to ensure correct alignment when flowable fill is used as backfill for pipe or where flotation or misalignment may occur.

Protect flowable fill from freezing for a period of 36 hours after placement.

Place flowable fill to the designated fill line without vibration or other means of compaction. Do not place flowable fill during inclement weather, e.g. rain or ambient temperatures below 40ºF. Take all necessary precautions to prevent any damages caused by the hydraulic pressure of the fill during placement prior to hardening. Provide the means to confine the material within the designated space.

121-6 Acceptance.

Acceptance of flowable fill will be based on the following documentation and a minimum temperature of flowable fill at the point of delivery of 50ºF.

Furnish a delivery ticket to the Engineer for each load of flowable fill delivered to the worksite. Ensure that each ticket contains the following information:

.(1) Project designation,
.(2) Date,
.(3) Time,
.(4) Class and quantity of flowable fill,
.(5) Actual batch proportions,
.(6) Free moisture content of aggregates,
.(7) Quantity of water withheld.

Leave the fill undisturbed until the material obtains sufficient strength. Sufficient strength is 35 psi penetration resistance as measured using a hand held penetrometer in accordance with ASTM C 403. Provide a hand held penetrometer to measure the penetration resistance of the hardened flowable fill.

SECTION 125
EXCAVATION FOR STRUCTURES AND PIPE

125-6 Disposal of Surplus.

Use suitable excavated materials for backfilling over or around the structure. Dispose of unsuitable materials. Meet the disposal requirements pertaining to water pollution contained in Section 104 and in 7-1.1.

125-8 Backfilling.

125-8.1 General Requirements for Structures and Pipe:

125-8.1.1 General: Backfill in the Dry whenever normal dewatering equipment and methods can accomplish the needed dewatering. A LOT is defined as one lift of backfill material placement, not to exceed 500 feet in length or a single run of pipe connecting two successive structures, whichever is less. Backfill around structures compacted separately from the pipe will be considered as separate LOTs. Backfill on each side of the pipe for the first lift will be considered a separate LOT. Backfill on opposite sides of the pipe for the remaining lifts will be considered separate LOTs, unless the same compactive effort is applied. For multiple phase backfill, a LOT shall not extend beyond the limits of the phase.

When placing backfill within a trench box each lift of backfill is considered a LOT. Placement of backfill within trench box limits will be considered a complete operation before trench box is moved for next backfill operation. When the trench box is moved for next backfill operation this will start new LOTs for each lift.

125-8.1.2 Equipment and Methods: Provide normal dewatering equipment including, but not limited to, surface pumps, sump pumps, wellpoints and header pipe and trenching/digging machinery. Provide normal dewatering methods including, but not limited to, constructing shallow surface drainage trenches/ditches, using sand blankets, perforated pipe drains, sumps and siphons.

125-8.1.3 Backfill Materials: Backfill to the original ground surface or subgrade surface of openings made for structures, with a sufficient allowance for settlement. The Engineer may require that the material used for this backfill be obtained from a source entirely apart from the structure. Use only material accepted by the Engineer.

Do not allow heavy construction equipment to cross over culvert or storm sewer pipes until placing and compacting backfill material to the finished earthwork grade or to an elevation at least 4 feet above the crown of the pipe.

125-8.1.4 Use of A-7 Material: In the backfilling of trenches, A-7 material may be used from a point 12 inches above the top of the pipe up to the elevation shown on the Design Standards as the elevation for undercutting of A-7 material.

125-8.1.5 Time of Placing Backfill: Do not place backfill against any masonry or concrete abutment, wingwall, or culvert until the Engineer has given permission to do so, and in no case until the masonry or concrete has been in place seven days or until the specified 28-day compressive strength occurs.

125-8.1.6 Placement and Compaction: Place the material in horizontal

layers not exceeding 6 inches compacted thickness, in depth above water level, behind abutments, wingwalls and end bents or end rest piers, under the haunches of the pipes and around box culverts and all structures including pipe culverts. When the backfill material is deposited in water, compact as specified in 125-8.2.5 and 125-8.3.4.

The Contractor may elect to place material in thicker lifts of no more than 12 inches compacted thickness outside the soil envelope if he can demonstrate with a successful test section that density can be achieved. Notify the Engineer prior to beginning construction of a test section. Construct a test section of the length of one LOT. Perform five QC tests at random locations within the test section. All five tests must meet the density required by 125-9.2 and be verified by the Department. Identify the test section with the compaction effort and soil classification in the Logbook. In case of a change in compaction effort or soil classification, construct a new test section. When a QC test fails the requirements of 125-9.2 or when the QC tests cannot be verified, construct a new test section. The Contractor may elect to place material in 6 inches compacted thickness at any time.

125-8.2 Additional Requirements for Structures Other than Pipe:

125-8.2.1 Density: Where the backfill material is deposited in water, obtain a 12 inches layer of comparatively dry material, thoroughly compacted by tamping, before verifying the layer and density requirements. Meet the requirements of the density Acceptance Criteria.

125-8.2.2 Box Culverts: For box culverts over which pavement is to be constructed, compact around the structure to an elevation not less than 12 inches above the top of the structure, using rapid-striking mechanical tampers.

125-8.2.3 Other Limited Areas: Compact in other limited areas using mechanical tampers or approved hand tampers, until the cover over the structure is at least 12 inches thick. When hand tampers are used, deposit the materials in layers not more than 4 inches thick using hand tampers suitable for this purpose with a face area of not more than 100 in^2. Take special precautions to prevent any wedging action against the masonry, and step or terrace the slope bounding the excavation for abutments and wingwalls if required by the Engineer.

125-8.2.4 Culverts and Piers: Backfill around culverts and piers on both sides simultaneously to approximately the same elevation.

125-8.2.5 Compaction Under Wet Conditions: Where wet conditions do not permit the use of mechanical tampers, compact using hand tampers. Use only A-3 material for the hand tamped portions of the backfill. When the backfill has reached an elevation and condition such as to make the use of the mechanical tampers practical, perform mechanical tamping in such manner and to such extent as to transfer the compaction force into the sections previously tamped by hand.

125-8.3 Additional Requirements for Pipe 15 Inches Inside Diameter or Greater: 125-8.3.1 General: Trenches for pipe may have up to four zones that must be backfilled. Lowest Zone: The lowest zone is backfilled for deep undercuts up to within 4 inches of the bottom of the pipe.

Bedding Zone: The zone above the Lowest Zone is the Bedding Zone. Usually it will be the backfill which is the 4 inches of soil below the bottom of the pipe. When rock or other hard material has been removed to place the pipe, the Bedding Zone will be the 12

inches of soil below the bottom of the pipe.

Cover Zone: The next zone is backfill that is placed after the pipe has been laid and will be called the Cover Zone. This zone extends to 12 inches above the top of the pipe. The Cover Zone and the Bedding Zone are considered the Soil Envelope for the pipe.

Top Zone: The Top Zone extends from 12 inches above the top of the pipe to the base or final grade.

125-8.3.2 Material:

125-8.3.2.1 Lowest Zone: Backfill areas undercut below the Bedding Zone of a pipe with coarse sand, or other suitable granular material, obtained from the grading operations on the project, or a commercial material if no suitable material is available.

125-8.3.2.2 Soil Envelope: In both the Bedding Zone and the Cover Zone of the pipe, backfill with materials classified as A-1, A-2, or A-3. Material classified as A-4 may be used if the pipe is concrete pipe.

125-8.3.2.3 Top Zone: Backfill the area of the trench above the soil envelope of the pipe with materials allowed on Design Standard, Index No. 505.

125-8.3.3 Compaction:

125-8.3.3.1 Lowest Zone: Compact the soil in the Lowest Zone to approximately match the density of the soil in which the trench was cut.

125-8.3.3.2 Bedding Zone: If the trench was not undercut below the bottom of the pipe, loosen the soil in the bottom of the trench immediately below the approximate middle third of the outside diameter of the pipe.

If the trench was undercut, place the bedding material and leave it in a loose condition below the middle third of the outside diameter of the pipe. Compact the outer portions to meet the density requirements of the Acceptance Criteria. Place the material in lifts no greater than 6 inches (compacted thickness).

125-8.3.3.3 Cover Zone: Before placing the Cover Zone material, lay pipe according to Section 430. Excavate for pipe bells before laying pipe. Place the material in 6 inches layers (compacted thickness), evenly deposited on both sides of the pipe, and compact with mechanical tampers suitable for this purpose. Hand tamp material below the pipe haunch that cannot be reached by mechanical tampers. Meet the requirements of the density Acceptance Criteria.

125-8.3.3.4 Top Zone: Place the material in layers not to exceed 12 inches in compacted thickness. Meet the requirements of the density Acceptance Criteria.

125-8.3.4 Backfill Under Wet Conditions: Where wet conditions are such that dewatering by normal pumping methods would not be effective, the procedure outlined below may be used when specifically authorized by the Engineer in writing. The Department will pay for any select material which is not available from the grading as Unforeseeable Work. The Department will not pay for select material that might be used by the Contractor for his own convenience instead of dewatering.

The Department will permit the use of granular material below the elevation at which mechanical tampers would be effective, but only material classified as A-3. Place and compact the material using timbers or hand tampers until the backfill reaches an elevation such that it's moisture content will permit the use of mechanical tampers. When the backfill has reached such elevation, use normally acceptable backfill material. Compact the material using mechanical tampers in such manner and to such extent as to transfer the compacting force into the material previously tamped by hand.

The Department will permit the use of coarse aggregate below the elevation at which mechanical tampers would be effective. Use coarse aggregate as specified in Section 901 for Aggregate Size Number 89, 8, 78, 7, 68, 6, or 57. Place the coarse aggregate such that it will be stable and firm. Fully wrap the aggregate with a layer of Type D-4 filter fabric, as specified on Design Standard, Index No. 199. Do not place coarse aggregate within 4 feet of the ends of the trench or ditch. Use normally accepted backfill material at the ends.

SECTION 160 STABILIZING

160-1 Description.

Stabilize designated portions of the roadbed to provide a firm and unyielding subgrade, having the required bearing value specified in the plans. When specified in the plans, provide additional strengthening of the subbase by additional stabilizing of the upper portion of the previously stabilized subgrade, within the limits specified. Perform work in accordance with an approved Quality Control Plan meeting the requirements of 6-8.

160-2 Stabilized Subgrade.

For stabilized subgrade, choose the type of material, Commercial or Local.

When the stabilizing is designated as Type B, the Engineer will determine compliance with the bearing value requirements by the Limerock Bearing Ratio (LBR) Method. If approved by the Engineer and only for materials requiring an LBR value of 40, the Engineer may omit Sections 6.0 and 6.1 of Florida Method of Test for Limerock Bearing Ratio (FM 5-515) and perform an Unsoaked LBR Test. The Engineer or the Contractor may request to use this method. If the Unsoaked LBR Test results in a failing test, then the Engineer will perform a standard Soaked LBR Test.

Take responsibility for making the finished roadbed section meet the bearing value requirements, regardless of the quantity of stabilizing materials necessary to be added. Also, the Department will make full payment for any areas where the existing subgrade materials meet the design bearing value requirements without the addition of stabilizing additives, as well as areas where the Contractor may elect to place select high-bearing materials from other sources within the limits of the stabilizing.

After substantially completing the roadbed grading operations, determine the type and quantity (if any) of stabilizing material necessary for compliance with the bearing value requirements. Notify the Engineer of the approximate quantity to be added. Obtain the Engineer's approval for spreading and mixing-in of such quantity of materials to achieve uniformity and effectiveness.

The Engineer may allow, at no additional cost to the Department, the substitution of 6 inches of Granular Subbase meeting the requirements of Section 290, when 12 inches of Type B Stabilization requiring an LBR value of 40 is specified.

160-3 Stabilized Subbase..

When Stabilized Subbase is required, after the mixing operations for the stabilization of the entire subgrade limits, strengthen the upper portion of the subgrade, within the limits shown, by adding and mixing-in a loose depth of commercial stabilizing material as designated in the plans or as may be otherwise designated by the Engineer. Provide a minimum depth of spread 3 inches (loose measurement).

160-4 Materials

160-4.1 Commercial and Local Materials: Meet the requirements of Section 914 for the particular type of stabilizing material to be used.

160-4.2 Use of Materials from Existing Base: When the use of materials from an existing base is required as all, or a portion, of the stabilizing additives, the Engineer will direct the location, placement, and distribution of such materials. Perform this work prior to the spreading of any additional commercial or local materials. Do not remove any section of existing base until the need for it in maintaining traffic is fulfilled.

The Engineer may direct the Contractor to use materials from an existing base in combination with either of the designated types of stabilizing.

160-5 Construction Methods.

160-5.1 General: A LOT is defined as a single lift of finished Subgrade, not to exceed 500 feet. Isolated mixing operations will be considered as separate LOTs. Curbpads and shoulders compacted separately shall be considered separate LOTs. Isolated compaction operations will be considered as separate LOTs. For multiple phase construction, a LOT shall not extend beyond the limits of the phase. Prior to the beginning of stabilizing operations, construct the area to be stabilized to an elevation such that, upon completion of stabilizing operations, the completed stabilized subgrade will conform to the lines, grades, and cross-section shown in the plans. Prior to spreading any additive stabilizing material, bring the surface of the roadbed to a plane approximately parallel to the plane of the proposed finished surface.

The Contractor may process the subgrade to be stabilized in one course, unless the equipment and methods being used do not provide the required uniformity, particle size limitation, compaction, and other desired results, in which case, the Engineer will direct that the processing be done in more than one course.

160-5.2 Application of Stabilizing Material: When additive stabilizing materials are required, spread the designated quantity uniformly over the area to be stabilized. When materials from an existing base are to be used in the stabilizing at a particular location, place and spread all of such materials prior to the addition of other stabilizing additives.

Spread commercial stabilizing material by the use of mechanical material

spreaders, except that where use of such equipment is not practicable, use other means of spreading, but only upon written approval of the proposed alternate method.

160-5.3 Mixing: Perform mixing using rotary tillers or other equipment meeting the approval of the Engineer. The Contractor may mix the materials in a plant of an approved type suitable for this work. Thoroughly mix the area to be stabilized throughout the entire depth and width of the stabilizing limits.

Perform the mixing operations, as specified, (either in place or in a plant) regardless of whether the existing soil, or any select soils placed within the limits of the stabilized sections, have the required bearing value without the addition of stabilizing materials.

160-5.4 Maximum Particle Size of Mixed Materials: At the completion of the mixing, ensure that the gradation of the material within the limits of the area being stabilized is such that 97% will pass a 3 1/2 inch sieve and that the material does not have a plasticity index greater than eight or liquid limit greater than 30. Remove any materials not meeting the plasticity requirements from the stabilized area. The Contractor may break down or remove from the stabilized area materials, including clay lumps or lumps made of clay-size particles (any particle size 2 microns or less), not meeting the gradation requirements.

160-5.5 Compaction: Except where a stabilized subbase is also to be constructed (as specified in 160-6), after completing the mixing operations and satisfying the requirements for bearing value, uniformity, and particle size. Compact the materials at a moisture content permitting the specified compaction in 160-7.2.3. If the moisture content of the material is improper for attaining the specified density, either add water or allow the material to dry until reaching the proper moisture content for the specified compaction.

160-5.6 Finish Grading: Shape the completed stabilized subgrade to conform with the finished lines, grades, and cross-section indicated in the plans. Check the subgrade using elevation stakes or other means approved by the Engineer.

160-5.7 Requirements for Condition of Completed Subgrade: After completing the stabilizing and compacting operations, ensure that the subgrade is firm and substantially unyielding to the extent that it will support construction equipment and will have the bearing value required by the plans.

Remove all soft and yielding material, and any other portions of the subgrade which will not compact readily, and replace it with suitable material so that the whole subgrade is brought to line and grade, with proper allowance for subsequent compaction.

160-5.8 Maintenance of Completed Subgrade: After completing the subgrade as specified above, maintain it free from ruts, depressions, and any damage resulting from the hauling or handling of materials, equipment, tools, etc. The Contractor is responsible for maintaining the required density until the subsequent base or pavement is in place including any repairs, replacement, etc., of curb and gutter, sidewalk, etc., which might become necessary in order to recompact the subgrade in the event of underwash or other damage occurring to the previously compacted subgrade. Perform any such recompaction at no expense to the Department. Construct and maintain ditches and drains along the completed subgrade section.

160-6 Stabilized Subbase (Additional Strengthening of Upper Portion).

When a stabilized subbase is to be constructed in conjunction with the stabilization operations, after the mixing of the stabilization area as specified in 160-5.3, and determination that the bearing value requirements specified in 160-7.2.1 have been met, shape the area over which the stabilized subbase is to be constructed as provided in 160-5.1, and compact it sufficiently to provide a firm surface for the operations to follow. Spread the amount of commercial stabilizing material specified in 160-3 for this operation, in accordance with 160-5.2, and mix it to the depth indicated in the plans, in accordance with 160-5.3. Allow a tolerance of 1 inch in excess of the plan depth in this mixing. The Engineer will not perform any additional tests for bearing value after the mixing of materials for the Stabilized Subbase.

Compact and finish grading, as specified in 160-5.5 and 160-5.6, and meet the provisions of 160-5.4, 160-5.7, and 160-5.8 for this work.

When commercial materials are used as the stabilizing additives for the initial subgrade stabilization, the Engineer may eliminate the work of Stabilized Subbase, either entirely or in designated sections of the overall limits for this work as may be specified in the plans.

160-7 Acceptance Program.

160-7.1 General Requirements: Meet the requirements of 120-10.1, except use 160-7.2 instead of 120-10.2.

160-7.2 Acceptance Criteria:

160-7.2.1 Bearing Value Requirements:

160-7.2.1.1 General: Within the entire limits of the width and depth of the areas to be stabilized, obtain the required minimum bearing value for each LOT. For any area where the bearing value obtained is deficient from the value indicated in the plans, in excess of the tolerances established herein, spread and mix additional stabilizing material in accordance with 160-5.3. Perform this reprocessing for the full width of the roadway being stabilized and longitudinally for a distance of 50 feet beyond the limits of the area in which the bearing value is deficient.

Determine the quantity of additional stabilizing material to be used in reprocessing.

160-7.2.1.2 Undertolerances in Bearing Value Requirements: Use the following undertolerances from the specified bearing value, as based on tests performed on samples obtained after completing mixing operations:

Specified Bearing Value	Tolerance
LBR 40	5.0
LBR 35	4.0
LBR 30 (and under)	2.5

The following unsoaked bearing value requirement is based on tests performed on

samples obtained after completing mixing operations:

Specified Bearing Value	Unsoaked Bearing Value Required	Tolerance
LBR 40	LBR 43	0.0

160-7.2.2 Mixing Depth Requirements: Do not exceed individual depth tolerance of 2 inches or LOT-average depth tolerance of 1 inch.

As an exception to the above mixing requirements, where the subgrade is of rock, the Engineer may waive the mixing operations (and the work of stabilizing), and the Department will not pay for stabilization for such sections of the roadway.

160-7.2.3 Density Requirements:

160-7.2.3.1 General: Within the entire limits of the width and depth of the areas to be stabilized, other than as provided in 160-7.2.3.2, obtain a minimum density at any location of 98% of the Modified Proctor maximum density as determined by FM 1-T 180, Method D.

160-7.2.3.2 Exceptions to Density Requirements: The Contractor need not obtain the minimum density specified in 160-7.2.3.1 if within the following limits:

.(a) The width and depth of areas which are to be subsequently incorporated into a base course under the same contract.

.(b) The upper 6 inches of areas to be grassed under the same contract. Compact these areas to a reasonably firm condition as directed by the Engineer.

SECTION 522 CONCRETE SIDEWALK

522-1 Description.

Construct concrete sidewalks.

522-2 Materials.

Meet the requirements specified in 520-2.

522-3 Forms.

Provide forms as specified in 520-3.

522-4 Foundation.

Compact fill areas, including cut areas under the sidewalk that have been excavated more than 6 inches below the bottom of sidewalk, to a minimum of 95% of AASHTO T 99 density. The area to be compacted is defined as that area directly under the sidewalk and 1 foot beyond each side of the sidewalk when right-of-way allows.

522-5 Joints.

522-5.1 Expansion Joints: Form 1/2 inch expansion joints between the sidewalk and the curb or driveway or at fixed objects and sidewalk intersections with a preformed joint filler

meeting the requirements specified in 932-1.1.

522-5.2 Contraction Joints:

522-5.2.1 Types: The Contractor may use open type or sawed contraction joints.

522-5.2.2 Open-Type Joints: Form open type contraction joints by staking a metal bulkhead in place and depositing the concrete on both sides. After the concrete has set sufficiently to preserve the width and shape of the joint, remove the bulkhead. After finishing the sidewalk over the joint, edge the slot with a tool having a 1/2 inch radius.

522-5.2.3 Sawed Joints: If electing to saw the contraction joints, cut a slot approximately 3/16 inch wide and not less than 1 1/2 inches deep with a concrete saw after the concrete has set, and within the following periods of time:

Joints at not more than 30 feet intervals .....within 12 hours after finishing.

Remaining joints .....within 96 hours after finishing.

522-6 Placing Concrete.

Place the concrete as specified in 520-5.

522-7 Finishing.

522-7.1 Screeding: Strike-off the concrete by means of a wood or metal screed, used perpendicular to the forms, to obtain the required grade and remove surplus water and laitance.

522-7.2 Surface Requirements: Provide the concrete with a broom finish. Ensure that the surface variations are not more than 1/4 inch under a 10 foot straightedge, or more than 1/8 inch on a 5 foot transverse section. Finish the edge of the sidewalk with an edging tool having a radius of 1/2 inch.

Apply a tine finish by an approved hand method to curb cut ramps in lieu of a broom finish.

Ensure that the tine finish consists of transverse grooves which are 0.03 to 0.12 inch in width and 0.10 to 0.15 inch in depth, spaced at approximately 1/2 inch center to center.

522-8 Curing.

Cure the concrete as specified in 520-8.

SECTION 555
DIRECTIONAL BORE

555-1 Description.

555-1.1 Scope of Work: The work specified in this Section documents the approved construction methods, procedures and materials for Directional Boring, also commonly called Horizontal Directional Drilling (HDD).

555-1.2 General: HDD is a trenchless method for installing a product that serves as a conduit for liquids, gasses, or as a duct for pipe, cable, or wire line products. It is a multi-stage process consisting of site preparation and restoration, equipment setup, and drilling a pilot bore along a predetermined path and then pulling the product back through the drilled space. When necessary, enlargement of the pilot bore hole may be necessary to accommodate a product larger than the pilot bore hole size. This process is referred to as back reaming and is done at the same time the product is being pulled back through the pilot bore hole.

Accomplish alignment of the bore by proper orientation of the drill bit head as it is being pushed into the ground by a hydraulic jack. Determine orientation and tracking of the drill bit by an above ground radio detection device which picks up a radio signal generated from a transmitter located within the drill bit head. Then electronically translate the radio signal into depth and alignment. In order to minimize friction and prevent collapse of the bore hole, introduce a soil stabilizing agent (drilling fluid) into the annular bore space from the trailing end of the drill bit. The rotation of the bit in the soil wetted by the drilling fluid creates a slurry. The slurry acts to stabilize the surrounding soil and prevent collapse of the bore hole as well as provides lubrication.

Select or design drilling fluids for the site specific soil and ground water conditions. Confine free flowing (escaping) slurry or drilling fluids at the ground surface during pull back or drilling. Accomplish this by creating sump areas or vacuum operations to prevent damage or hazardous conditions in surrounding areas. Remove all residual slurry from the surface and restore the site to preconstruction conditions.

555-2 Materials.

555-2.1 General: Materials are defined as pipe or conduit that becomes the installed product. Incidental materials that may or may not be used to install the product depending on field requirements are not paid for separately and will be included in the cost of the installed product.

555-2.2 Material Type: The following material standards are to be interpreted as the minimum in place standards. Use materials that are appropriate for the stresses generated by the selected equipment and field conditions. It is not intended to portray that the use of materials with these minimum material standards will retain their required properties if the stress limits are exceeded for which they were designed during installation. Ensure that the appropriate material is used to retain compliance once it is installed.

Material Standards for HDD Installation		
Material Type	Non-Pressure	Pressure
Polyethylene (PE)	ASTM D 2447	ASTM 2513

Material Standards for HDD Installation		
		ASTM D 2447
High Density Polyethylene (HDPE)	ASTM D 2447 ASTM D 3350 ASTM F714	ASTM D 2447 ASTM D 3350 ASTM F714 ASTM 2513
Polyvinyl-Chloride (PVC)	ASTM F 789	N/A
Steel	ASTM A139 Grade B (1)	AWWA C200 API 2B(2)
(1) No hydrostatic test required (2)Dimensional tolerances only		

555-3 Construction Site Requirements.

555-3.1 The Americans With Disabilities Act: When and where installations temporarily disrupt pedestrian use of sidewalk areas for periods exceeding two consecutive work days, provide an alternate route that meets ADA requirements.

555-3.2 Site Conditions:

(a) Carry out excavation for entry, exit, recovery pits, slurry sump pits, or any other excavation as specified in Section 120. Sump pits are required to contain drilling fluids if vacuum devices are not operated throughout the drilling operation, unless approved by the Engineer.

(b) Within 48 hours of completing installation of the boring product, clean the work site of all excess slurry or spoils. Take responsibility for the removal and final disposition of excess slurry or spoils. Ensure that the work site is restored to pre-construction conditions or as identified on the plans.

(c) Provide MOT in accordance with the Department Design Standards and the MUTCD when and where the former is silent.

(d) Exposure of product shall be limited to 3 feet and 14 consecutive days unless approved by the Engineer.

555-3.3 Damage Restoration: Take responsibility for restoration for any damage caused by heaving, settlement, separation of pavement, escaping drilling fluid (frac-out), or the directional drilling operation, at no cost to the Department.

555-3.3.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied. These details will become part of the As-Built Plans Package. Remediation Plans must follow the same guidelines for development and presentation of the As-Built Plans. When remediation plans are required, they must be approved by the Engineer before any work proceeds.

555-4 Quality Control.

555-4.1 General: Take control of the operation at all times. Have a representative who is thoroughly knowledgeable of the equipment, boring and Department procedures, present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting

work. Do not begin installation until the Engineer is present at the job site and agrees that proper preparations have been made.

555-4.1.1 Product Testing: When there is any indication that the installed product has sustained damage and may leak, stop all work, notify the Engineer and investigate damage. The Engineer may require a pressure test and reserves the right to be present during the test. Perform pressure test within 24 hours unless otherwise approved by the Engineer. Furnish a copy of test results to the Engineer for review and approval. The Engineer is allowed up to 72 hours to approve or determine if the product installation is not in compliance with the specifications. The Engineer may require non-compliant installations to be filled with excavatable flowable fill.

555-4.1.2 Testing Methods: Testing may consist of one of the following methods and must always meet or exceed the Department's testing requirements:

(a) Follow the product manufacturer's pressure testing recommendations.

(b) Ensure that product carrier pipes installed without a casing meet the pressure requirements set by the owner. If the owner does not require pressure testing, the Engineer may require at least one test.

(c) A water tight pipe and joint configuration where the product is installed beneath any pavement (including sidewalk) and front shoulders is required. The Engineer will determine when and where water tight joint requirements will be applied to the ultimate roadway section for future widening. When a product is located elsewhere, the pipe and joint configuration must meet or exceed soil tight joint requirements. Conduct tests for joint integrity for one hour. The test for a soil tight joint allows up to 0.1 gallon of water leakage at a sustained pressure of 2 PSI. The water tight joint criteria allows no leakage at all for a sustained pressure of 5 PSI.

555-4.1.3 Failed Bore Path: If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it will be at no cost to the Department. Promptly fill all voids by injecting all taken out of service products that have any annular space with excavatable flowable fill.

555-4.2 Product Locating and Tracking: The method of locating and tracking the drill head during the pilot bore will be shown in the plans. The Department recognizes walkover, wire line, and wire line with surface grid verification, or any other system as approved by the Engineer, as the accepted methods of tracking directional bores. Use a locating and tracking system capable of ensuring that the proposed installation is installed as intended. If an area of radio signal interference is expected to exceed 5 feet, the Engineer may specify the use of a suitable tracking system. The locating and tracking system must provide information on:

(a) Clock and pitch information
(b) Depth
(c) Transmitter temperature
(d) Battery status
(e) Position (x,y)
(f) Azimuth, where direct overhead readings (walkover) are not possible (i.e. subaqueous or limited access transportation facility)
(g) Ensure proper calibration of all equipment before commencing directional drilling operation.

(h) Take and record alignment readings or plot points such that elevations on top of and offset dimensions from the center of the product to a permanent fixed feature are provided. Such permanent fixed feature must have prior approval of the Engineer. Provide elevations and dimensions at all bore alignment corrections (vertical and horizontal) with a minimum distance between points of 100 feet. Provide a sufficient number of elevations and offset distances to accurately plot the vertical and horizontal alignment of the installed product. A minimum of three elevation and plot points are required.

Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a minimum of two separate and continuous conductive tracking (tone wire) materials, either externally, internally or integral with the product. Use either a continuous green sheathed solid conductor copper wire line (minimum #12 AWG for external placement or minimum #14 AWG for internal placement in the conduit/casing) or a coated conductive tape. Conductors must be located on opposite sides when installed externally. Connect any break in the conductor line before construction with an electrical clamp, or solder, and coat the connection with a rubber or plastic insulator to maintain the integrity of the connection from corrosion. Clamp connections must be made of brass or copper and of the butt end type with wires secured by compression. Soldered connections must be made by tight spiral winding of each wire around the other with a finished length minimum of 3 inches overlap. Tracking conductors must extend 2 feet beyond bore termini. Test conductors for continuity. Each conductor that passes must be identified as such by removing the last 6 inches of the sheath. No deductions are allowed for failed tracking conductors. Failed conductor ends must be wound into a small coil and left attached for future use.

555-4.3 Product Bore Hole Diameter: Minimize potential damage from soil displacement/settlement by limiting the ratio of the bore hole to the product size. The size of the back reamer bit or pilot bit, if no back reaming is required, will be limited relative to the product diameter to be installed as follows:

Maximum Pilot or Back-Reamer Bit Diameter When Rotated 360 Degrees	
Nominal Inside Pipe Diameter Inches	Bit Diameter Inches
2	4
3	6
4	8
6	10
8	12
10	14
12 and greater	Maximum Product OD plus 6

555-4.4 Drilling Fluids: Use a mixture of bentonite clay or other approved stabilizing agent mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and soil stabilization. Vary the fluid viscosity to best fit the soil conditions encountered. Do not use any other chemicals or polymer surfactants in the drilling fluid without written consent from the Engineer. Certify to the Engineer in writing that any chemicals to be added are environmentally safe and not harmful or

corrosive to the facility. Identify the source of water for mixing the drilling fluid. Approvals and permits are required for obtaining water from such sources as streams, rivers, ponds or fire hydrants. Any water source used other than a potable water may require a pH test.

555-4.5 Equipment Requirements: Ensure that appropriate equipment is provided to facilitate the installation as follows:

HDD Equipment				
System Description	Pipe [1] Diameter Inches	Bore Length Feet	Torque Ft-Lbs	Trust/Pullback Lbs
Maxi-HDD	18 and greater	>1,000	>10,000	>70,000
Midi-HDD	Up to 16	Up to 1,000	1,900 to 9,999	20,001 to 69,999
Mini-HDD	Up to 6	Up to 600	Up to 1,899	Up to 20,000

[1] For the above, multiple pipe or conduit installations must not exceed the total outside pipe diameters stated above.

Match equipment to the size of pipe being installed. Obtain the Engineer's approval for installations differing from the above chart. Ensure that the drill rod can meet the bend radius required for the proposed installation.

555-4.6 Thrust/Pullback Requirements: Unless approved by the Engineer, limit use of HDD equipment to installing the following product sizes and lengths based on the following product size, force and length relationships.

HDD Bore Equipment Thrust/Pullback Capacity						
Lbs	5,000 to 7,000	7,001 to 12,000	12,001 to 16,000	16,001 to 25,000	25,001 to 40,000	>40,000
Product Size [1] Inches	Maximum Pullback Distance In Feet					
4 or <	400 or <					
6 or <		600 or <				
8 or <			800 or <			
10 or <				1,000 or <		
12 or <					2,000 or <	
> 12						Engineer's Discretion

[1] for the above, where a single pull of multiple conduits is to be attempted, the applicable product size must be determined by the diameter of a circle that will circumscribe the individual conduits as a group.

555-5 Drilling Operations:

555-5.1 Installation Process: Ensure adequate removal of soil cuttings and stability of the bore hole by monitoring the drilling fluids such as the pumping rate, pressures, viscosity and density during the pilot bore, back reaming and pipe installation. Relief holes can be used as necessary to relieve excess pressure down hole. Obtain the Engineer's approval of the location and all conditions necessary to construct relief holes to ensure the proper disposition of drilling fluids is maintained and unnecessary inconvenience is minimized to other facility users.

To minimize heaving during pull back, the pull back rate is determined in order to maximize the removal of soil cuttings without building excess down hole pressure. Contain excess drilling fluids at entry and exit points until they are recycled or removed from the site or vacuumed during drilling operations. Ensure that entry and exit pits are of sufficient size to contain the expected return of drilling fluids and soil cuttings.

Ensure that all drilling fluids are disposed of or recycled in a manner acceptable to the appropriate local, state, or federal regulatory agencies. When drilling in suspected contaminated ground, test the drilling fluid for contamination and appropriately dispose of it. Remove any excess material upon completion of the bore. If in the drilling process it becomes evident that the soil is contaminated, contact the Engineer immediately. Do not continue drilling without the Engineer's approval.

The timing of all boring processes is critical. Install a product into a bore hole within the same day that the pre-bore is completed to ensure necessary support exists.

555-5.2 Boring Failure: If an obstruction is encountered during boring which prevents completion of the installation in accordance with the design location and specification, the pipe may be taken out of service and left in place at the discretion of the Engineer. Immediately fill the product left in place with excavatable flowable fill. Submit a new installation procedure and revised plans to the Engineer for approval before resuming work at another location. If, during construction, damage is observed to the FDOT facility, cease all work until resolution to minimize further damage and a plan of action for restoration is obtained and approved by the Engineer.

555-6 Documentation Requirements.

555-6.1 Boring Path Report: Furnish a Bore Path Report to the Engineer within seven days of the completion of each bore path. Include the following in the report:

(a) Location of project and financial project number including the Permit Number when assigned

(b) Name of person collecting data, including title, position and company name

(c) Investigation site location (Contract plans station number or reference to a permanent structure within the project right-of-way)

(d) Identification of the detection method used

(e) Elevations and offset dimensions as required in 555-4.3

555-6.2 As-Built Plans: Provide the Engineer a complete set of As-Built Plans showing all bores (successful and failed) within 30 calendar days of completing the work. Ensure that the plans are dimensionally correct copies of the Contract plans and include roadway plan and profile, cross-section, boring location and subsurface conditions as directed by the Engineer. The plans must show appropriate elevations and be referenced

to a Department Bench Mark when associated with a Department project, otherwise to a USGS grid system and datum, or a specific location on top of an existing Department head wall. Plans must be same scale in black ink on white paper, of the same size and weight as the Contract plans. Submittal of electronic plans data in lieu of hard copy plans is preferred and may be approved by the Engineer if compatible with the Department software. Specific plans content requirements include but may not be limited to the following:

(a) The Contract plan view shows the center line location of each facility installed, or installed and placed out of service, to an accuracy of 1 inch at the ends and other points physically observed in accordance with the bore path report.

(b) As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Show the ground or pavement surface and crown elevation of each facility installed, or installed and placed out of service, to an accuracy within 1 inch at the ends and other exposed locations. On profile plans for bore paths crossing the roadway show stationing of the crossing on the Contract plans. On the profile plans for the bore paths paralleling the roadway, show the Contract plans stationing. If the profile plan for the bore path is not made on a copy of one of the Contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

(c) If, during boring, an obstruction is encountered which prevents completion of the installation in accordance with the design location and specification, and the product is left in place and taken out of service, show the failed bore path along with the final bore path on the plans. Note the failed bore path as “Failed Bore Path - Taken Out of Service”. Also show the name of the Utility owner, location and length of the drill head and any drill stems not removed from the bore path.

(d) Show the top elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

(e) Include bore notes on each plan stating the final bore path diameter, product diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the product, or facility placed out of service. Note if the product is a casing as well as the size and type of carrier pipe placed within the casing as part of the Contract work.

SECTION 556
JACK AND BORE

556-1 Description.

556-1.1 Scope of Work: The work specified in this Section documents the approved construction methods, procedures and materials for Jack and Bore (J&B), also known as auger boring. Micro tunneling (MT) is also included in the category of J&B for purposes of specifications.

556-1.2 General: J&B is a method for installing a product (often called a casing) that may serve as a direct conduit for liquids or gases, or as a duct for carrier (Pipe, cable, or wire line products). It is a multi-stage process consisting of constructing a temporary horizontal jacking platform and a starting alignment track in an entrance pit at a desired elevation. The product is then jacked by manual control along the starting alignment track with simultaneous excavation of the soil being accomplished by a rotating cutting head in the leading edge of the product's annular space. The ground up soil (spoil) is transported back to the entrance pit by helical wound auger flights rotating inside the product. J&B typically provides limited tracking and steering as well as limited support to the excavation face.

Micro tunneling is conducted similar to J&B with the exception that it is remotely controlled, guided pipe jacking process that provides continuous support to the excavation face. The guidance system usually consists of a laser mounted in the tunneling drive shaft which communicates a reference line to a target mounted inside the MT machine's articulated steering head. The MT process provides the ability to control the excavation face stability by applying mechanical or fluid pressure to counterbalance the earth and hydrostatic pressures.

Removal and disposition of excess material varies, is the responsibility of the boring contractor and is not covered under this Specification. However, the cost of removal or final disposition is included in the cost of the J&B operation.

No J&B conduit may be left open ended without approval of the Engineer to prevent the conduit from acting as a drainage structure.

556-2 Materials.

Select materials approved for installation within the right-of-way based on their suitability for the construction method as defined in Table 556-2.1. After determining product suitability, individual material standards as contained in Table 556-2.2 apply.

Table 556-2.1
Product Suitability by Construction Method

Type	Pipe/Casing Installation Mode	Suitable Pipe/Casing
Jack and Bore	Jacking	Steel, Plastic
Micro tunneling	Jacking	DI, FRPM, PC, PCCP, RCCP, RCP, Steel

Table 556-2.2
Material Standards Acceptable for J&B and MT Installations

Material Type	Non-Pressure	Pressure
Ductile Iron (DI)	AWWA C150/C151 ASTM A716, A747	AWWA C150/C151
Fiberglass Reinforced Polymer Mortar (FRPM)	ASTM D 3262	ASTM D 3517 AWWA C950
Polymer Concrete (PC)	DIN 54815-1 & 2	N/A
Prestressed Concrete Cylinder Pipe (PCCP)	N/A	AWWA C300
Reinforced Concrete Cylinder Pipe (RCCP)	N/A	ASTM C361
Reinforced Concrete Pipe (RCP)	ASTM C 79 ASCE xx-97	ASTM C361 AWWA C300/C302
Steel	ASTM A139 Grade B(1) API 2B(2)	AWWA C200 API 2B(2)
Polyvinyl Chloride (PVC)	ASTM D 1785	N/A
Polyethylene (PE)	ASTM D 2447 ASTM D 2513 FOR GAS > 3 Inches	N/A
Polybutylene (PB)	ASTM D 2662	N/A
Cellulose Acetate Butyrate (CAB)	ASTM D 1503	N/A
Acrylonitrile Butadiene Styrene (ABS)	ASTM D 1527	N/A
Reinforced Thermosetting Resin Pipe (RTRP)	ASTM D 2296 OR ASTM D2997	N/A

(1) No hydrostatic test required
(2) Dimensional tolerances only

Unless otherwise tested and approved by the Department, only use encasement pipe or uncased carrier pipe material that is new and has smooth interior and exterior walls.

556-2.1 Steel Pipe Casing and Welds: In addition to meeting or exceeding the conditions contained in Tables 556-2.1 and Table 556-2.2, meet the following requirements:

(a) The size of the steel casing must be at least 6 inches larger than the largest outside diameter of the carrier.

(b) The casing pipe must be straight seam pipe or seamless pipe.

(c) All steel pipe may be bare inside and out, with the manufacturer's recommended minimum nominal wall thicknesses to meet the greater of either installation, loading or carrier requirements.

(d) All steel casing pipe must be square cut and have dead-even lengths which are compatible with the J&B equipment.

Use steel pipe casings and welds meeting or exceeding the thickness requirements to achieve the service life requirements noted in the Department Drainage Manual Chapter 6. For purposes of determining service life, ensure that casings installed under roadways meet or exceed cross drain requirements and casings under driveways

meet or exceed side drain pipe requirements. For purposes of material classification, consider steel pipe casing structural plate steel pipe. Ensure that steel pipe casing of insufficient length achieves the required length through fully welded joints. Ensure that joints are air-tight and continuous over the entire circumference of the pipe with a bead equal to or exceeding the minimum of either that required to meet the thickness criteria of the pipe wall for jacking and loading or service life. A qualified welder must perform all welding.

556-2.2 Reinforced Concrete Pipe Casing: In addition to meeting or exceeding the conditions contained in Tables 556-2.1 and Table 556-2.2, meet the following requirements:

Ensure that concrete pipe complies with the following minimum requirements:

(a) 5,000 psi concrete compressive strength

(b) Class III, IV, or V as required by load calculations, with a C-wall

(c) Full circular inner and/or outer reinforcing cage

(d) Multiple layers of steel reinforcing cages, wire splices, laps and spacers are permanently secured together by welding in place

(e) Straight outside pipe wall with no bell modification

(f) No elliptical reinforcing steel is allowed

(g) Single cage reinforcement with a 1 inch minimum cover from the inside wall

(h) Double cage reinforcement with a 1 inch minimum cover from each wall

(i) Joints are gasket type

(j) Additional joint reinforcement

Upon installation, the Engineer may, at his discretion, require the Contractor to perform concrete wiping or injection of the joints if it is believed the joints have not maintained their water tightness during the jacking operation. No additional payment will be made for this operation.

556-2.3 Plastic Pipe Casing: Plastic pipe may be jacked and bored if its physical properties are sufficient, and it is rigid such that when supported or suspended at mid point it maintains a straight alignment. If plastic pipe is Jacked and Bored it may not be used as a pressurized carrier. Plastic pipe casing installed by the jack and bore method requires the use of an auger. Open end jacking without the use of an auger for continuous cleanout of the bore as the pipe is advanced is not permitted. Closed end jacking is not permitted.

556-2.4 Pipe Couplings and Joints: In addition to meeting or exceeding the conditions contained in Tables 556-2.1 and 556-2.2, to minimize potential for bore failure, couplings must not project at right angles from the casing diameter by more than 3/4 inch.

(a) Steel Pipe Coupling and Joints:

1. Welds must comply with 556-2.1(d) when couplings are not used or when the coupling thickness is less than the casing thickness.

2. When couplings are used the casing joint needs only to be tack welded. Couplings must have a full bead weld such that the thickness, when measured at

an angle of 45 degrees to the casing and coupling interface, must be no less than the casing thickness.

(b) Plastic Pipe Couplings and Joints:

1. Must meet or exceed all ASTM strength and composition standards established for the casing material to which they are being attached.

2. Joints must be made sufficiently strong to withstand the pressures of jacking. All chemical welds must be completely set and cured before any jacking is attempted.

556-3 Construction Site Requirements.

556-3.1 The Americans With Disabilities Act: When and where installations temporarily disrupt pedestrian use of sidewalk areas for periods exceeding two consecutive work days, provide an alternate route that meets ADA requirements.

556-3.2 Site Conditions:

(a) Carry out excavation for entry, exit, recovery pits, auger slurry sump pits, or any other excavation as specified in Section 120. Unless approved by the Engineer, sump pits are required to contain auger fluids if vacuum devices are not operated throughout the boring operation.

(b) Within 48 hours of completing installation of the boring product, ensure that the work site is cleaned of all excess auger fluids or spoils. Removal and final disposition of excess fluids or spoils is the responsibility of the boring Contractor and ensure that the work site is restored to pre-construction conditions or as identified on the plans.

(c) Restore excavated areas in accordance with the specifications and Design Standards.

(d) Provide MOT in accordance with the Department Design Standards and the MUTCD when and where the former is silent.

(e) Ensure that equipment does not impede visibility of the roadway user without taking the necessary precautions of proper signing and Maintenance of Traffic Operations.

556-3.3 Ground Water Control: Investigate all sites for possibility of having to manage groundwater problems that may occur due to seasonal changes or natural conditions.

(a) When ground water level must be controlled, use a system and equipment that is compatible with the properties, characteristics, and behavior of the soils as indicated by the soil investigation report.

556-3.4 Damage Restoration: Take responsibility for restoring any damage caused by heaving, settlement, separation of pavement, escaping boring fluid (fracout) of the J&B operation at no cost to the Department.

556-3.4.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied. These details will become part of the As-Built Plans Package. Remediation Plans must follow the same guidelines for development and presentation of the As-Built Plans. When remediation plans are required, they must be approved by the Engineer before any work proceeds.

556-4 Quality Control.

556-4.1 General: Take control of the operation at all times. Have a representative who is thoroughly knowledgeable of the equipment, boring, and Department procedures present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting work. Do not begin the installation until the Engineer is present at the job site and agrees that proper preparations have been made.

556-4.2 Construction Process and Approval: For all installations, submit sufficient information to establish the proposed strategy for providing the following:

(a) An indication of where the leading edge of the casing is located with respect to line and grade and the intervals for checking line and grade. Indication may be provided by using a water gauge (Dutch level) or electronic transmitting and receiving devices. Other methods must have prior approval. Maintain a record of the progress at the job site.

(b) Equipment of adequate size and capability to install the product and including the equipment manufacturer's information for all power equipment used in the installation.

(c) A means for controlling line and grade.

(d) A means for centering the cutting head inside the borehole.

(e) Provide a means for preventing voids by assuring:

1. The rear of the cutting head from advancing in front of the leading edge of the casing by more than 1/3 times the casing diameter and in stable cohesive conditions not to exceed 8 inches.

2. In unstable conditions, such as granular soil, loose or flowable materials, the cutting head is retracted into the casing a distance that permits a balance between pushing pressure, pipe advancement and soil conditions.

3. Development of and maintaining a log of the volume of spoil material removal relative to the advancement of the casing.

(f) Adequate casing lubrication with a bentonite slurry or other approved technique.

(g) An adequate band around the leading edge of the casing to provide extra strength in loose unstable materials when the cutting head has been retracted into the casing to reduce skin friction as well as provides a method for the slurry lubricant to coat the outside of the casing.

(h) At least 20 feet of full diameter auger at the leading end of the casing. Subsequent auger size may be reduced, but the reduced auger diameter must be at least 75% of the full auger diameter.

(i) Water to be injected inside the casing to facilitate spoil removal. The point of injection shall be no closer than 2 feet from the leading edge of the casing.

556-4.3 Testing:

556-4.3.1 Product Testing: When there is any indication that the installed product has sustained damage and may leak, stop the work, notify the Engineer and investigate damage. The Engineer may require a pressure test and reserves the right to be present during the test. Perform pressure test within 24 hours unless otherwise approved by the Engineer. Furnish a copy of the test results to the Engineer for review and approval. The Engineer shall be allowed up to 72 hours to approve or determine if the

product installation is not in compliance with specifications. The Engineer may require non-compliant installations to be filled with excavatable flowable fill.

556-4.3.2 Testing Methods: Testing may consist of one of he following methods but must always meet or exceed Department testing requirements.

(a) Follow the Product Manufacturer's pressure testing recommendations.

(b) Ensure that the product carrier pipes installed without a casing meet the pressure requirements set by the owner. If the owner does not require pressure testing, the Engineer may require at least one test.

1. The Department requires a water tight pipe and joint configuration where the product is installed beneath any pavement (including sidewalk) and front shoulders. The Engineer will determine when and where water tight joint requirements shall be applied to the ultimate roadway section for future widening. When under the pavement conduct an air pressure test for leaks in the presence of the Engineer at a minimum test pressure of 20 PSI by either of the following methods.

i. Standard 24 hour pressure test with a recording chart or,

ii. A dragnet type leak detector or equivalent device capable of detecting pressure drops of 1/2 PSI for a time period recommended by the manufacturer.

2. When a product is not located under the pavement, the pipe and joint configuration must meet or exceed soil tight joint requirements. The test for a soil tight joint allows up to 0.1 gallon of water leakage at a sustained pressure of 2 PSI. The water tight joint criteria allows no leakage at all for a sustained pressures of 5 PSI. Conduct test for joint integrity for one hour.

556-4.4 Product Locating and Tracking: Install all facilities such that their location can be readily determined by electronic designation after installation. For non-conductive installations, attach a minimum of two separate and continuous conductive tracking (tone wire) materials, either externally, internally, or integral with the product. Use either a continuous green sheathed solid conductor copper wire line (minimum #12 AWG for external placement or minimum #14 AWG for internal placement in the conduit/casing) or a coated conductive tape. Ensure that conductors are located on opposite sides when installed externally. Connect any break in the conductor line before construction with an electrical clamp or solder, and coat the connection with a rubber or plastic insulator to maintain the integrity of the connection from corrosion. Clamp connections must be made of brass or copper and of the butt end type with wires secured by compression. Soldered connections must be made by tight spiral winding of each wire around the other with a finished length minimum of 3 inches overlap. Tracking conductors must extend 2 feet beyond bore termini. Conductors must be tested for continuity. Identify each conductor that passes by removing the last 6 inches of the sheath. No deductions are allowed for failed tracking conductors. Failed conductor ends must be wound into a small coil and left attached for future use.

556-4.5 Augering Fluids: Use a mixture of bentonite clay or other approved stabilizing agent mixed with potable water with a minimum pH of 6.0 to create the drilling fluid for lubrication and soil stabilization. Vary the fluid viscosity to best fit the soil conditions encountered. Do not use other chemicals or polymer surfactant in the

drilling fluid without written consent of the Engineer. Certify in writing to the Engineer that any chemicals to be added are environmentally safe and not harmful or corrosive to the facility. Identify the source of water for mixing the drilling fluid. Approvals and permits are required for obtaining water from such sources as streams, rivers, ponds or fire hydrants. Any water source used other than potable water may require a pH Test.

556-4.6 Micro-Tunneling (MT) and Micro Tunnel Boring Machine (MTBM) Requirements.

556-4.6.1 Performance Requirements: The MTBM must meet the following minimum performance requirements:

(a) Capable of providing positive face support regardless of the MTBM type.

(b) Articulated to enable controlled steering in both the vertical and horizontal direction to a tolerance of plus or minus 1 inch from design alignment.

(c) All functions are controlled remotely from a surface control unit.

(d) Capable of controlling rotation, using a bi-directional drive on the cutter head or by using anti-roll fins or grippers. The Engineer must approve other methods.

(e) Capable of injecting lubricant around the exterior of the pipe being jacked.

(f) Indication of steering direction.

For slurry systems, the following is also required:

(g) The volume of slurry flow in both the supply and return side of the slurry loop.

(h) Indication of slurry bypass valve position.

(i) Indication of pressure of the slurry in the slurry chamber.

556-4.7 Failed Bore Path: If conditions warrant removal of any materials installed in a failed bore path, as determined by the Engineer, it will be at no cost to the Department. Promptly fill all voids by injecting all taken out of service products that have any annular space with excavatable flowable fill.

556-5 Jack and Bore and Micro-Tunneling Operations:

556-5.1 Installation Process: Provide continuous pressure to the face of the excavation to balance groundwater and earth pressures. Ensure that shafts are of sufficient size to accommodate equipment, the pipe selected and to allow for safe working practices. Provide entry and exit seals at shaft walls to prevent inflows of groundwater, soil, slurry and lubricants. Use thrust blocks designed to distribute loads in a uniform manner so that any deflection of the thrust block is uniform and does not impart excessive loads on the shaft itself or cause the jacking frame to become misaligned.

The jacking system must have the capability of pushing the pipe in J&B operations or MTBM and pipe for MT operations through the ground in a controlled manner and be compatible with the anticipated jacking loads and pipe capacity. Monitor the jacking force applied to the pipe and do not exceed the pipe manufacturer’s recommendations.

Ensure that the pipe lubrication system is functional at all times and sufficient to reduce jacking loads. Use pipe lubrication systems that include a mixing

tank, holding tank and pumps to convey lubricant from the holding tank to application points at the rear of the MTBM. Maintain sufficient fluids on site to avoid loss of lubrication.

Power Distribution System must be identified in the plans package or permit provisions as well as any noise constraints. Identity spoil removal capability and method to avoid creating hindrance to other activities which may be necessary in the area.

556-5.2 Excess Material and Fluids: Monitor the pumping rate, pressures, viscosity and density of the boring fluids to ensure adequate removal of soil cuttings and the stability of the borehole. Contain excess drilling fluids, slurry and soil cuttings at entry and exit points in pits until they are recycled or removed from the site.

Ensure that all boring fluids are disposed of or recycled in a manner acceptable to the appropriate local, state or federal regulatory agencies. When jacking and boring in suspected contaminated ground, test the boring fluid for contamination and dispose of appropriately. Remove any excess material upon completion of the bore. If it becomes evident that the soil is contaminated, contact the Engineer immediately. Do not continue boring without the Engineer's approval.

556-5.3 Boring Failure: If an obstruction is encountered which prevents completion of the installation in accordance with the design location and specifications; the pipe may be taken out of service and left in place at the discretion of the Engineer. Immediately fill the product left in place with excavatable flowable fill. Submit a new installation procedure and revised plans to the Engineer for approval before resuming work at another location. If damage is observed to any property, cease all work until a plan of action to minimize further damage and restore damaged property is submitted and approved by the Engineer.

556-6 Documentation Requirements.

556-6.1 Boring Path Report: Furnish a Bore Path Report to the Engineer within 14 days of the completion of each bore path. Submit the As-Built-Plans to the Engineer within 30 calendar days. No payment will be made for directional boring work until the Bore Path Report has been delivered to the Department. Include the following information in the report:

(a) Location of project and financial project number including the Permit Number when assigned.

(b) Name of person collecting data, including title, position and company name.

(c) Investigation site location (Contract plans station number or reference to a permanent structure within the project right-of-way).

(d) Identification of the detection method used.

(e) Spoils removal log.

(f) As-built placement plans showing roadway plan and profile, cross-section, boring location and subsurface conditions as defined in Bore Path Plans below. Reference the shown plan elevations to a Department Bench Mark when associated with a Department project, otherwise to a USGS grid system and datum or to the top of an existing Department head wall. These plans must be the same scale in black ink on white paper, of the same size and weight and as the Contract plans. Submittal of electronic

plans data in lieu of hard copy plans may be approved by the Engineer if compatible with the Department software.

556-6.2 As-Built Plans: Provide the Engineer with a complete set of As-Built-Plans showing all bores (successful and failed) within 30 calendar days of completion of the work. Plans must be dimensionally correct copies of the Contract plans. Include notes on the plans stating the final bore path diameter, facility diameter, drilling fluid composition, composition of any other materials used to fill the annular void between the bore path and the facility or facility placed out of service. If the facility is a casing, note this, as well as the size and type of carrier pipes to be placed within the casing as part of the Contract work. Produce the plans as follows:

(a) On the Contract plan view, show the centerline location of each facility, installed or installed and placed out of service to an accuracy within 1 inch at the ends and other points physically observed. They show the remainder of the horizontal alignment of the centerline of each facility installed or installed and placed out of service and note the accuracy with which the installation was monitored.

(b) As directed by the Engineer, provide either a profile plan for each bore path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Also show the ground or pavement surface and the crown elevation of each facility installed, or installed and placed out of service, accurately to within 1 inch at the ends and other points physically observed. Show the remainder of the vertical alignment of the crown of each facility installed, or installed and placed out of service and note the accuracy with which the installation was monitored. On profile plans for bore paths crossing the roadway, show the contract plans stationing. On the profile plans for bore paths paralleling the roadway show the contract plans stationing. If the profile plan for the bore path is not made on a copy of one of the contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

(c) If a bore path is not completed, show on the plans the failed bore path along with the name of the utility owner and the final bore path. Note the failed bore path as “Failed Bore Path.” Also show the location and length of the cutting head and any product not removed from the bore path.

(d) Show the crown elevation, diameter and material type of all utilities encountered and physically observed during the subsoil investigation. For all other obstructions encountered during subsoil investigation or the installation, show the type of material, horizontal and vertical location, top elevation and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

SECTION 557
VIBRATORY PLOWING

557-1 Description.

557-1.1 Scope of Work: The work specified in this Section documents the approved construction methods, procedures and materials for Vibratory Plowing, also known as cable plowing.

557-1.2 General: Vibratory Plowing is a trenchless method for installing a product which typically consists of a cable or small conduit for later insertion of wire line products. It is a multi-stage process consisting of positioning a vibrating plow equipped with a trailing product guide which feeds the cable or conduit to the depth setting of the plow as it moves forward. The product is inserted into the ground continuously along a predetermined path and depth. Reshape any disturbance of the ground surface such as localized residual mounding or grooves, by grading and compaction. If a conduit is installed, subsequent operations may involve pulling a desired product back through the conduit. The vertical depth of installation is controlled by two factors, hydraulic adjustment of the plow shear head and the surface contours. The depth of insertion must be continually adjusted to compensate for changes in terrain to ensure compliance with depth criteria. Horizontal profiles or steering the bore is accomplished by proper orientation of a tractor which pulls the vibratory plow. Alignments are generally limited to straight sections with minor deviation unless approved by the Engineer.

557-2 Construction Site Requirements.

557-2.1 Site Conditions: Consider vibratory plowing an excavation method and comply with all applicable provisions required of excavation methods.

(a) Ensure that subsequent excavation for manholes, hand pulls, or other service vaults, recovery pits or any other excavation is carried out as specified in Section 120.

(b) After completing installation of the product, restore the work site. Restore excavated or plowed areas in accordance with the Specifications and Design Standards.

(c) It is the plowing Contractor’s responsibility for removal of excess material or debris created during the construction process as well as restoring the site to the condition which existed before construction.

(d) Exposure may be allowed for periods exceeding 14 consecutive days if the exposure is limited to 3 feet or less. Periods longer than described above may be approved by the Engineer if it will not affect maintenance or construction activities.

(e) Ensure that equipment does not impede visibility of the roadway user without taking the necessary precautions of proper signing and Maintenance of Traffic Operations.

557-2.2 Damage Restoration: Take responsibility for restoring any damage caused by cutting, heaving, settlement or separation of pavement at no cost to the Department.

557-2.2.1 Remediation Plans: When required by the Engineer, provide detailed plans which show how damage to any roadway facility will be remedied and

include this as part of the As-Built Plans Package. Remediation Plans must follow the same guidelines for development and presentation of the As-Built Plans.

557-3 Quality Control.

557-3.1 General: Take control of the operation at all times, have a representative who is thoroughly knowledgeable of the equipment and procedures, present at the job site during the entire installation and available to address immediate concerns and emergency operations. Notify the Engineer 48 hours in advance of starting work. Do not begin installation until the Engineer is present at the job site and agrees that proper preparations have been made.

557-3.2 Alignment: Ensure that the plow operator maintains a true and consistent alignment. Deviation from the approved alignment more than 1 foot in either direction to avoid obstructions such as boulders, stumps or general vegetation will not be allowed unless approved by the Engineer. Document all approved deviations from the original permitted alignment.

557-3.3 Product Locating and Tracking: For all installations, submit sufficient information to establish the proposed strategy for compliance with the permit.

(a) Define what reference will be used to control and ensure alignment as permitted will be maintained with respect to line and grade. Also indicate the intervals for checking line and grade and maintain a record at the job site.

(b) Ensure the equipment is of adequate size and capability to install the project. This includes the equipment manufacturer's information for all power equipment used in the installation.

(c) Define the means for controlling line and grade.

Install all facilities in such a way that their location can be readily determined by electronic designation after installation. For non-conductive installations, accomplish this by attaching a minimum of two separate and continuous conductive wires (minimum 12 gauge) either externally, internally, or integrally with the product. Any break in the conductor must be connected by electrical clamp of brass or solder and coated with a rubber or plastic insulator to maintain the integrity of the connection from corrosion.

557-4 Documentation.

557-4.1 Plowing Path Report: Furnish a Plowing Path Report to the Engineer within 14 days of the completion of each installation. Include the following information on the report:

(a) Location of project and financial project number including the Permit Number when assigned.

(b) Name of person collecting data, including title, position and company name.

(c) Contract plans station number or reference to a permanent structure within the project right-of-way.

(d) As-built placement plans showing roadway plan and profile, cross-section and plowing location and elevations every 100 feet along the alignment. Reference shown plan elevations to a Department Bench Mark when associated with a Department project, otherwise to a USGS grid system and datum, or to the top of an existing Department head wall. These plans must be the same scale in black ink on white

paper, of the same size and weight and as the Contract plans. Submittal of electronic plans data in lieu of hard copy plans may be approved by the Engineer if compatible with the Department software.

557-4.2 As-Built Plans: Submit the completed As-Built Plans to the Engineer within 30 Calendar days. Ensure that the plans are dimensionally correct copies of the Contract plans. Include notes on each plan stating the final plow path, facility diameter and any facility placed out of service. If the facility is a duct, note this, as well as the size and type of product to be placed within the duct as part of the permitted work. Produce the plans as follows:

(a) On the Contract plan view, show the centerline location of each facility installed to an accuracy within 1 inch at the ends and other points physically observed. Show the remainder of the horizontal alignment of the centerline of each facility installed and note the accuracy with which the installation was monitored.

(b) As directed by the Engineer, provide either a profile plan for each path, or a cross-section of the roadway at a station specified by the Engineer, or a roadway centerline profile. Show the ground or pavement surface and the crown elevation of each facility installed to an accuracy within 1 inch at the ends and other points physically observed. Show the remainder of the vertical alignment of the crown of each facility installed and note the accuracy with which the installation was monitored. On profile plans for paths crossing the roadway show the Contract plans stationing of the crossing. On the profile plans for paths paralleling the roadway also show the Contract plans stationing. If the profile plan for the path is not made on a copy of one of the Contract profile or cross-section sheets, use a 10 to 1 vertical exaggeration.

(c) If, during installation, an obstruction is encountered which prevents installation of the product in accordance with this Specification, submit a new installation procedure and revised plans to the Engineer for approval before resuming work along a new alignment. If a section of a plowing path fails without installing a product or it has been removed, show the failed section of the plow path along with the final plow path on the plans. Note the failed path as “Failed Plow Path.” Do not leave any products in a failed plow path. If breakage occurs or the plow path fails, remove all products from the broken or failed section of the plow path.

(d) On all of the plans, show the crown elevation, diameter and material type of all utilities encountered and physically observed during installation. For all other obstructions encountered during a subsoil investigation or the installation, show the type of material, horizontal and vertical location, top elevation and lowest elevation observed, and note if the obstruction continues below the lowest point observed.

SECTION 700 HIGHWAY SIGNING

700-2.5 Sign Background: is expanded by the following:

Use fluorescent orange Type VI or VII for all orange work zone signs on interstates and all roll-up signs starting July 2004. Use fluorescent orange Type VI or VII for all orange work zone signs on all State Highway System Roads starting July 2005. Do not mix work zone signs having fluorescent orange sheeting with signs having orange reflective sheeting. Mesh signs shall meet the color, daytime luminance and non-reflective property requirements of Section 994, Type VI.

700-3.8 Process Colors: Use transparent and black opaque process colors meeting the requirements of 994-4 on reflective and non-reflective sheeting.

SECTION 994 RETROREFLECTIVE AND NONREFLECTIVE SIGN SHEETING

994-1 Description.

994-1.1 General: This Section specifies the requirements for retroreflective and nonreflective sheeting materials, transparent and opaque process inks for retroreflective sheeting materials, and film overlays for traffic control devices. The sheeting materials used shall be one of the products included on the Qualified Products List (QPL), as specified in 6-1.

994-3.3 Color: The retroreflective and non-reflective sheeting or film shall have the same daytime and nighttime color when viewed by reflective light regardless of type classification. The diffused color of the retroreflective sheeting, through instrumental color testing, shall conform to the requirements of ASTM D4956. In addition to ASTM D4956 Table 13, the fluorescent orange, fluorescent yellow-green and fluorescent pink colors shall meet the following x, y chromaticity coordinates:

Fluorescent	1	2	3	4
Yellow/Green				
x	.387	.368	.421	.460
y	.610	.539	.486	.540
Orange				
x	.583	.535	.595	.645
y	.416	.400	.351	.355

Fluorescent Pink	1	2	3	4
X	.450	.590	.644	.536
Y	.270	.350	.290	.230

The daytime luminance for fluorescent orange, fluorescent yellow-green and fluorescent pink sheeting shall have a luminance factor of 25 minimum, 60 minimum and 25 minimum respectively, in addition to ASTM D4956 Table 9.

PREFACE - APPENDIX B

This Appendix B contains certain Indexes from the Department's January 2006 Design Standards for Design, Construction, Maintenance, and Utility Operations on the State Highway System that supplement the requirements found in this UAM for utility restoration and certain other utility operations deemed necessary to preserve the condition of the R/W. Should the particular conditions in the field indicate that the standards contained in this Appendix B are insuffcient to restore FDOT R/W to the condition existing prior to utility work and that a standard not contained within this Appendix B is absolutely necessary to restore FDOT R/W to the condition existing prior to utility work, such standard shown in the Department's January 2006 Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System (excluding the 600 series indexes) will be prescribed by FDOT. To the extent it is possible to do, so such standard shall be identified on the permit, so adjustments to the utility work can be made by the utility. The January 2006 Design Standards for Design, Construction, Maintenance and Utility Operations on the State Highway System can be found on FDOT's website at http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.htm.

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

Appendix B

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

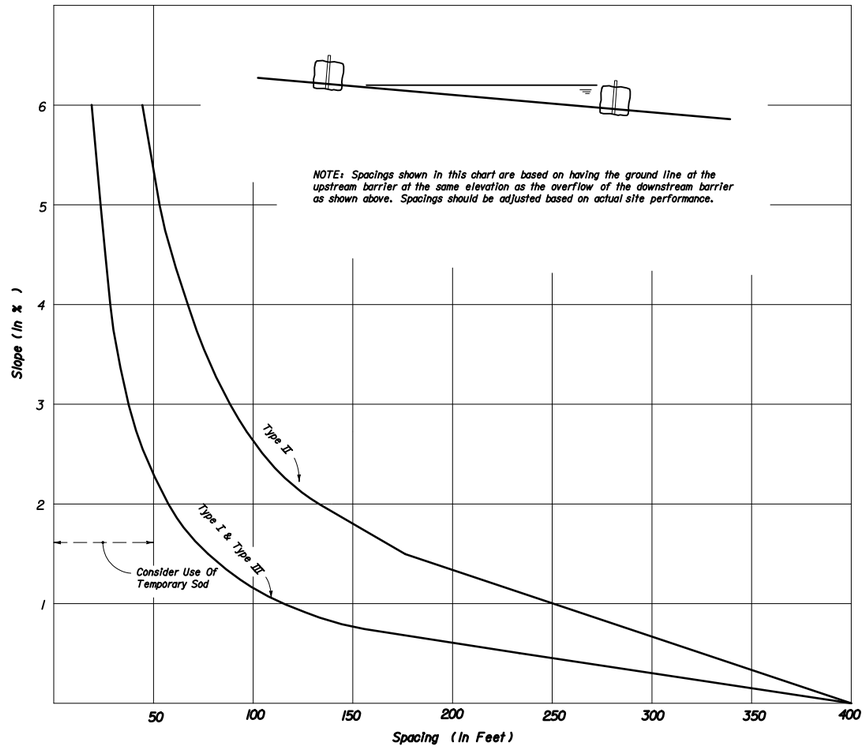
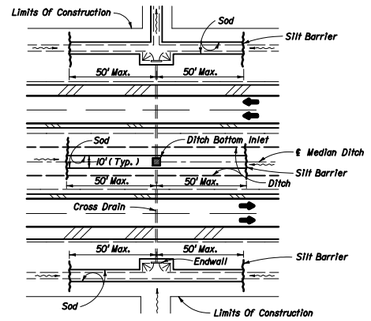


CHART I

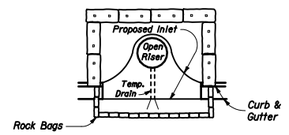
RECOMMENDED SPACING FOR BALED HAY BARRIERS AND TYPE III SILT FENCE



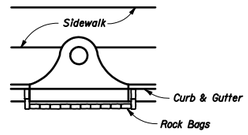
DITCH INSTALLATIONS AT DRAINAGE STRUCTURES

2006 FDOT Design Standards	Last Revision 00	Sheet No. 1 of 3
TEMPORARY EROSION AND SEDIMENT CONTROL		Index No. 102

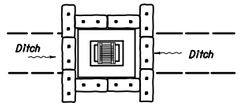
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	"CHART I" , delete the title and substitute "RECOMMENDED SPACING FOR SYNTHETIC BALES AND BALE TYPE BARRIERS AND TYPE III SILT FENCE"



PARTIAL INLET

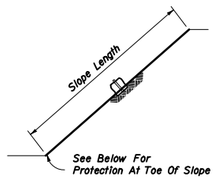


COMPLETED INLET



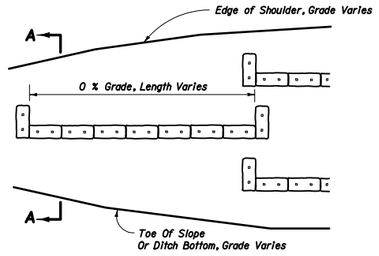
DITCH BOTTOM INLET

PROTECTION AROUND INLETS OR SIMILAR STRUCTURES



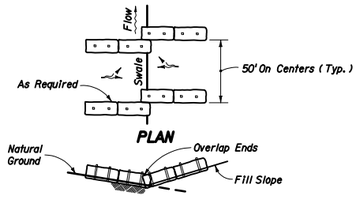
SECTION AA

Note:
Where the slope length exceeds 25 feet, construct one row of bale barriers at 0% longitudinal grade midway up the slope. Contruct two rows of bale barriers where the slope length exceeds 50 feet.



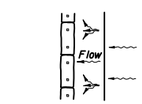
ELEVATION

ALONG FILL SLOPE

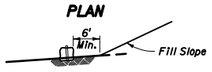


PLAN

ELEVATION
TO BE USED WHERE THE NATURAL GROUND SLOPES TOWARD THE TOE OF SLOPE



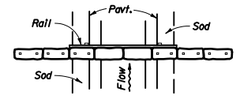
PLAN



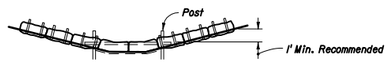
ELEVATION
TO BE USED WHERE THE NATURAL GROUND SLOPES AWAY FROM THE TOE OF SLOPE

AT TOE OF SLOPE

BARRIERS FOR FILL SLOPES

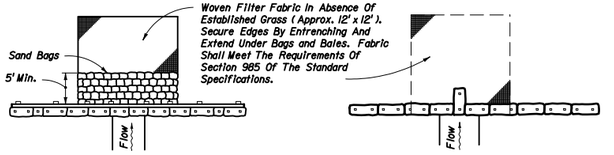


PLAN



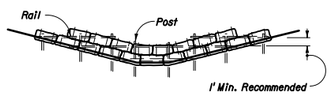
ELEVATION

BARRIER FOR PAVED DITCH



PLAN

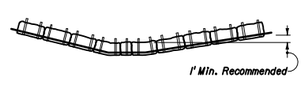
PLAN



Anchor Top Bales To Lower Bales With 2 Stakes Per Bale.

ELEVATION

TYPE II



ELEVATION

TYPE I

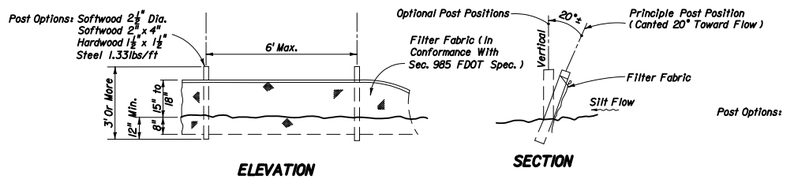
BARRIERS FOR UNPAVED DITCHES

NOTES FOR BALED HAY OR STRAW BARRIERS

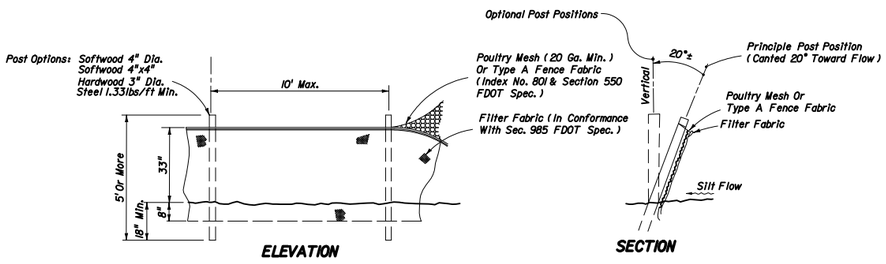
1. Type I and II Barriers should be spaced in accordance with Chart 1, Sheet 1.
2. Hay bales shall be trenched 3" to 4" and anchored with 2 - 1" x 2" (or 1" dia.) x 4' wood stakes. Stakes of other material or shape providing equivalent strength may be used if approved by the Engineer. Stakes other than wood shall be removed upon completion of the project.
3. Rails and posts shall be 2" x 4" wood. Other materials providing equivalent strength may be used if approved by the Engineer.
4. Adjacent bales shall be butted firmly together. Unavoidable gaps shall be plugged with hay or straw to prevent silt from passing.
5. Where used in conjunction with silt fence, hay bales shall be placed on the upstream side of the fence.
6. Bales to be paid for under the contract unit price for Baled Hay or Straw, EA. The unit price shall include the cost of filter fabric for Type I and II Barriers. Sand bags shall be paid for under the unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.

	2006 FDOT Design Standards	Last Revision 00	Sheet No. 2 of 3
	TEMPORARY EROSION AND SEDIMENT CONTROL		Index No. 102

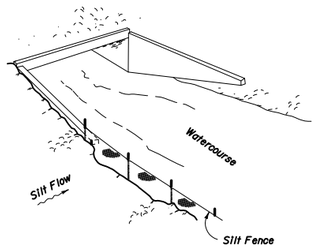
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS	
01/01/07	"BARRIER FOR PAVED DITCH " is deleted and "SYNTHETIC BALE AND BALE TYPE BARRIER FOR PAVED DITCH " substituted. "BARRIERS FOR UNPAVED DITCHES" is deleted and "SYNTHETIC BALES OR BALE TYPE BARRIERS FOR UNPAVED DITCHES" is substituted. "NOTES FOR BALED HAY OR STRAW BARRIERS" is deleted and "NOTES FOR SYNTHETIC BALES AND BALE TYPE BARRIERS" is substituted. Note 1 is deleted and the following substituted: " 1. Type I synthetic barrier should be spaced in accordance with Chart 1 on Sheet 1. "	Note 2, delete the word "Hay" . Note 4, delete the second sentence. Note 5 is deleted and the following substituted: " 5. Where used in conjunction with silt fence, bales shall be placed on the upstream side of the fence. " Note 6 is deleted and the following substituted: " 6. Bales to be paid for under the contract unit price for Synthetic Bales, LF. The unit price shall include the cost of filter fabric for Type I Barrier. Sand bags shall be paid for under the contract unit price for Sandbagging, CY. Rock bags to be paid for under the contract unit price for Rock Bags, EA.

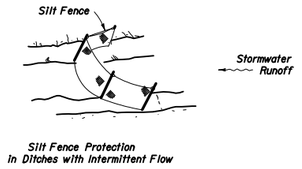


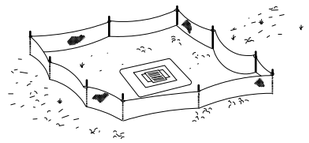
TYPE III SILT FENCE



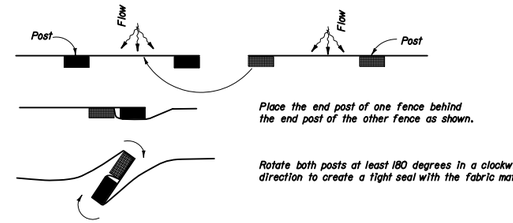
TYPE IV SILT FENCE







SILT FENCE APPLICATIONS



PLAN VIEW

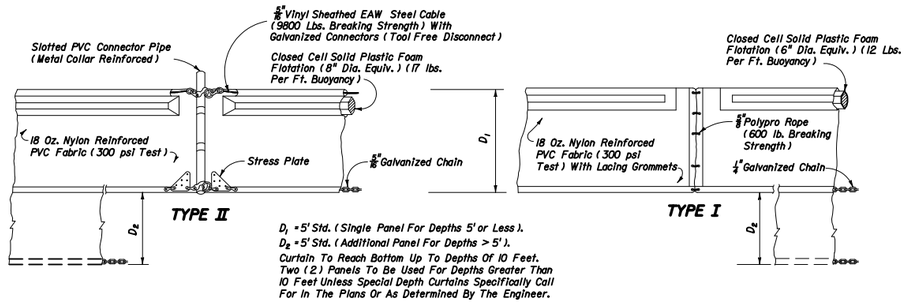
JOINING TWO SILT FENCES

NOTES FOR SILT FENCES

1. Type III Silt Fence to be used at most locations. Where used in ditches, the spacing for Type III Silt fence shall be in accordance with Chart 1, Sheet 1.
2. Type IV Silt Fence to be used where large sediment loads are anticipated. Suggested use is where fill slope is 1:2 or steeper and length of slope exceeds 25 feet. Avoid use where the detained water may back into travel lanes or off the right of way.
3. Do not construct silt fences across permanent flowing watercourses. Silt fences are to be at upland locations and turbidity barriers used at permanent bodies of water.
4. Where used as slope protection, Silt Fence is to be constructed on 0% longitudinal grade to avoid channelizing runoff along the length of the fence.
5. Silt Fence to be paid for under the contract unit price for Staked Silt Fence, (LF).

2006 FDOT Design Standards	Last Revision	Sheet No.
TEMPORARY EROSION AND SEDIMENT CONTROL	07/01/05	3 of 3
	Index No.	102

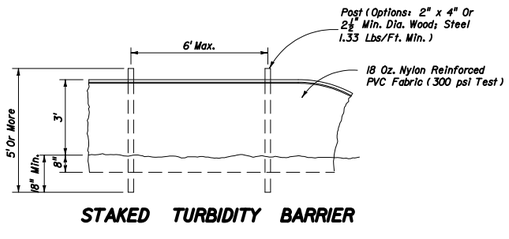
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



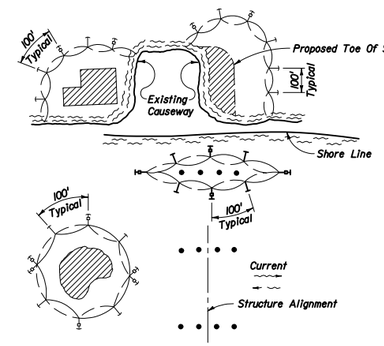
D_1 = 5' Std. (Single Panel For Depths 5' or Less).
D_2 = 5' Std. (Additional Panel For Depths > 5').
Curtain To Reach Bottom Up To Depths Of 10 Feet. Two (2) Panels To Be Used For Depths Greater Than 10 Feet Unless Special Depth Curtains Specifically Call For In The Plans Or As Determined By The Engineer.

NOTICE: COMPONENTS OF TYPES I AND II MAY BE SIMILAR OR IDENTICAL TO PROPRIETARY DESIGNS. ANY INFRINGEMENT ON THE PROPRIETARY RIGHTS OF THE DESIGNER SHALL BE THE SOLE RESPONSIBILITY OF THE USER. SUBSTITUTIONS FOR TYPES I AND II SHALL BE AS APPROVED BY THE ENGINEER.

FLOATING TURBIDITY BARRIERS

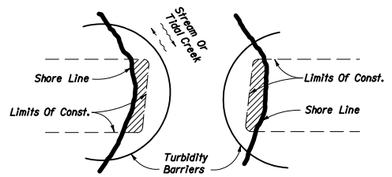


STAKED TURBIDITY BARRIER



LEGEND

- Pile Locations
- Dredge Or Fill Area
- Mooring Buoy w/Anchor
- Anchor
- Barrier Movement Due To Current Action



NOTES:
1. Turbidity barriers are to be used in all permanent bodies of water regardless of water depth.
2. Number and spacing of anchors dependent on current velocities.
3. Deployment of barrier around pile locations may vary to accommodate construction operations.
4. Navigation may require segmenting barrier during construction operations.
5. For additional information see Section 104 of the Standard Specifications.

Note:
Turbidity barriers for flowing streams and tidal creeks may be either floating, or staked types or any combinations of types that will suit site conditions and meet erosion control and water quality requirements. The barrier type(s) will be at the Contractors option unless otherwise specified in the plans, however payment will be under the pay item(s) established in the plans for Floating Turbidity Barrier and/or Staked Turbidity Barrier. Posts in staked turbidity barriers to be installed in vertical position unless otherwise directed by the Engineer.

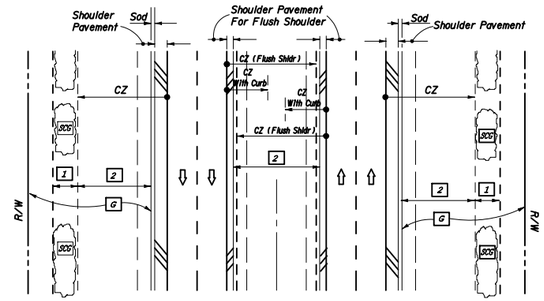
GENERAL NOTES

1. Floating turbidity barriers are to be paid for under the contract unit price for Floating Turbidity Barrier, LF.
2. Staked turbidity barriers are to be paid for under the contract unit price for Staked Turbidity Barrier, LF.

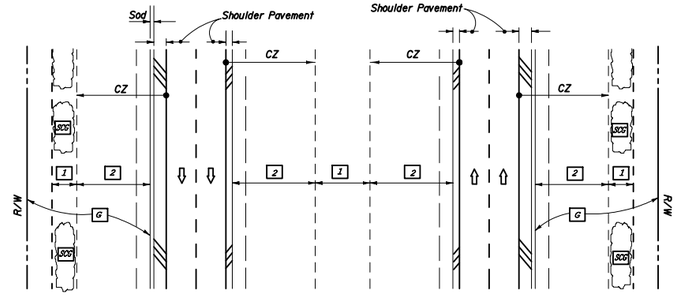
TURBIDITY BARRIER APPLICATIONS

2006 FDOT Design Standards	Last Revision 00	Sheet No. 1 of 1
TURBIDITY BARRIERS		Index No. 103

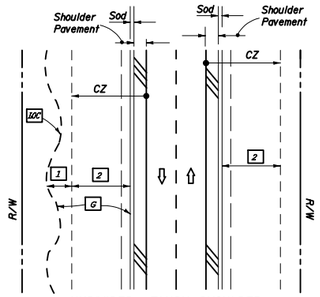
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



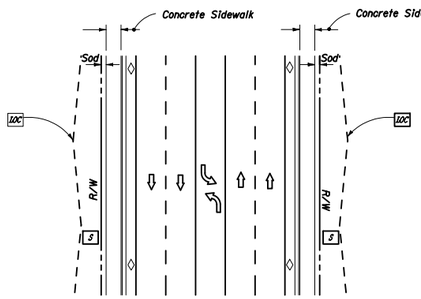
DIVIDED NARROW MEDIAN WITH OR WITHOUT CURBED MEDIAN



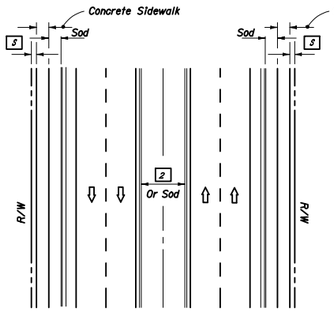
DIVIDED WIDE MEDIAN WITH OR WITHOUT CURBED MEDIAN



UNDIVIDED FLUSH SHOULDER



UNDIVIDED CURBED



DIVIDED CURBED

LEGEND

- 1 Wildflower Group #1
- 2 Wildflower Group #2
- G Grass-Seed/Seed & Mulch (To Limit of Construction)
- SCS Selective Clearing And Grubbing
- LOC Limits Of Construction
- S Seed, Seed And Mulch, Sod Or Seed, Sod

GRASS SEEDING RATES (Lbs/Ac)

TYPE OF SEED	ZONE I				ZONE II			
	COASTAL*		INLAND		COASTAL*		INLAND	
	Mar. to Nov.	Nov. to Mar.	Mar. to Nov.	Nov. to Mar.	Feb. to Dec.	Dec. to Feb.	Feb. to Dec.	Dec. to Feb.
PERMANENT GRASSES								
Unhulled Bermuda**		90		20		90		20
Hulled Bermuda **	60		15		60		15	
Bahia (Argentine Or Pensacola)			180	180			180	180
QUICK GROWING GRASS								
Annual Rye Grass		90		90		90		90
TOTAL POUNDS PER ACRE	60	180	195	290	60	180	195	290

*Locations where salt sensitive plants may be adversely affected by high concentrations of salts in soils, water or air. This may include seaside locations, low-lying areas subjected to periodic saltwater inundation from storms or high tides, or where salt intrusion into groundwater supply has occurred.

**Bermuda shall not be used in areas adjacent to existing or proposed landscaping.

Note: All seeding shall be performed meeting the requirements of Section 570 of the Standard Specifications.

GENERAL NOTE

Activities such as clearing, grading, and excavating that will disturb one or more acres of land require coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities from the Florida Department of Environmental Protection, and implementation of appropriate pollution prevention measures to minimize erosion and sedimentation and properly manage stormwater.

SEEDING RATE ZONES

WILDFLOWER SEEDING RATES

Common Name (Botanical Name)	lbs/ac
#1 Group	
Black-Eyed Susan (Rudbeckia hirta)	2
Lance-Leaf Tickseed (Coreopsis lanceolata)	10
Goldenmane Tickseed (Coreopsis basalis)	10
Leavenworth's Tickseed (Coreopsis leavenworthii)	10
Fire Wheel (Gaillardia pulchella)	10
Softhair Coneflower (Rudbeckia mollis)	2
Crimson Clover (Trifolium incarnatum)	15
#2 Group	
Annual Phlox (Phlox drummondii)	10
Moss Verbena (Verbena tenuisecta)	6
Leavenworth's Tickseed (Coreopsis leavenworthii)	10
Fire Wheel (Gaillardia pulchella)	10
Crimson Clover (Trifolium incarnatum)	15

GENERAL NOTE

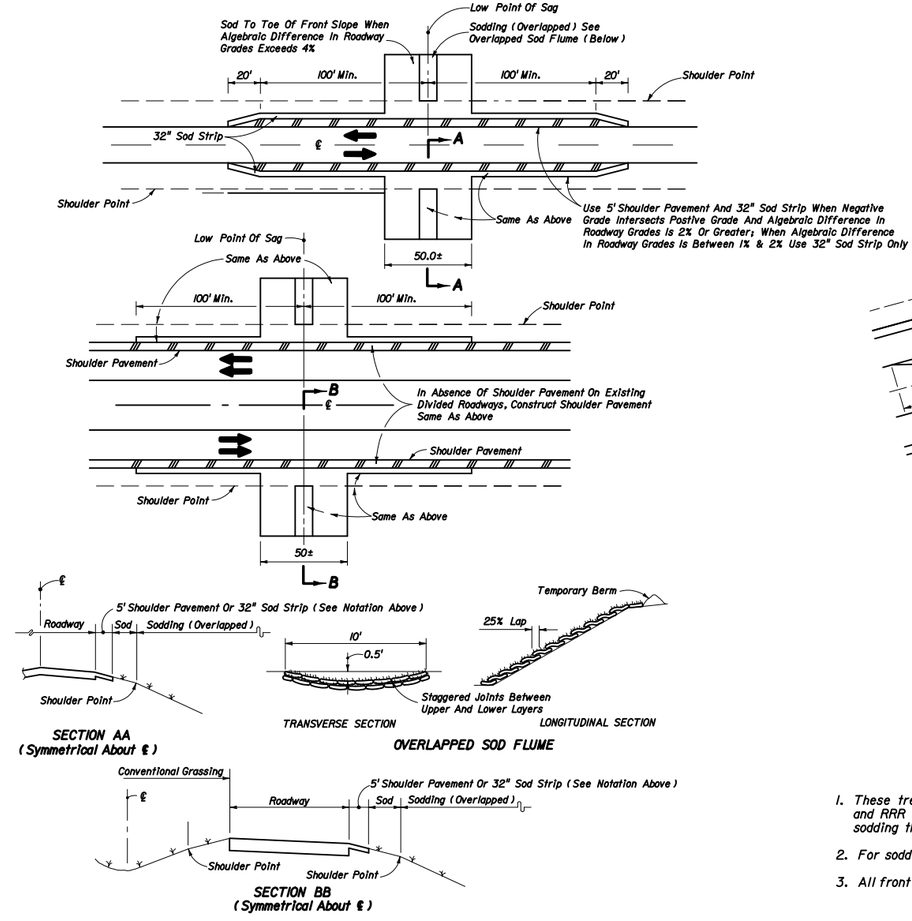
Confirm compatibility of wildflower with Grass Rate Zones.

2006 FDOT Design Standards

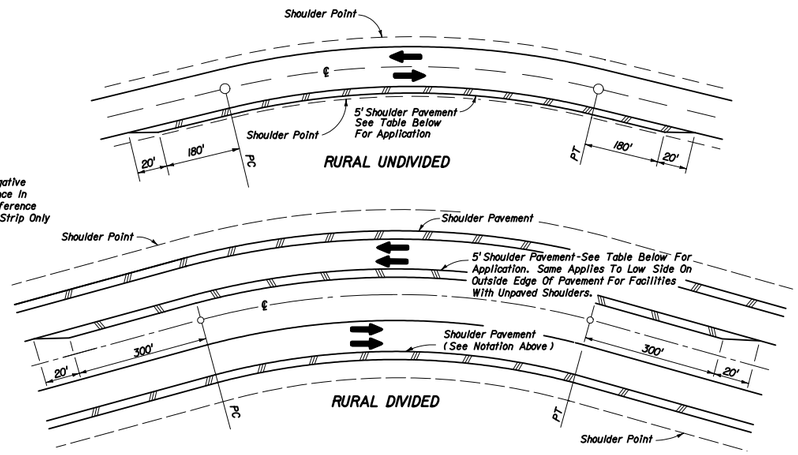
PERMANENT EROSION CONTROL

Last Revision 07/01/05 | Sheet No. 1 of 2 | Index No. 104

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	Under the "WILDFLOWER SEEDING RATES" chart add the following footnote: "Wildflower seeding rates are for restoring impacted wildflower areas." Under the "LEGEND", by symbol "G", delete " Grass Seed / Seed & Mulch" and insert "Turf " . By symbol "S", delete "Seed, Seed and Mulch, Sod or Seed, Sod" and insert "Turf " . Delete the "GRASS SEEDING RATES" table. Above the "GENERAL NOTE" insert the following: "NOTE: All turf establishment shall be performed meeting the requirements of Section 570 of the Standard Specifications" .



SHOULDER AND SLOPE TREATMENT IN SAG VERTICAL CURVES



CRITERIA FOR PAVING SHOULDER ON DIVIDED AND UNDIVIDED FACILITIES		
Design Speed (mph)	Degree Of Curve	
30	7° Or Greater	Note: Shoulder Pavement is required on all curves meeting the criteria tabulated. For curves not meeting the criteria, shoulders are to be paved where erosion of the shoulder is evident or anticipated.
40	5° Or Greater	
50	4° Or Greater	
60	3° Or Greater	
65	3° Or Greater	
70	2° Or Greater	

SHOULDER AND SLOPE TREATMENT FOR SUPERELEVATED ROADWAYS

NOTES

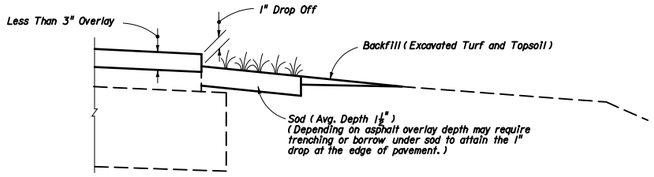
1. These treatments are applicable to new construction, reconstruction and RRR projects. Project requirements for shoulder pavement and sodding that exceed the limits of this standard take precedence.
2. For sodding adjacent to ditches and at headwalls, see Index No. 281.
3. All front slopes steeper than 1:3 are to be sodded.

TREATMENTS FOR PROTECTION FROM CONCENTRATED ROADWAY RUNOFF EROSION AND SHOULDER RAVELING

2006 FDOT Design Standards	Last Revision 02	Sheet No. 2 of 2
PERMANENT EROSION CONTROL	Index No. 104	

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	On the left side of "SECTION BB" delete the notation "Conventional Grassing" and insert "Turf ".

TREATMENT I



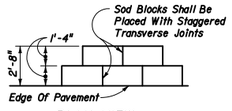
COMPLETED SHOULDER

CRITERIA FOR USING TREATMENT I

Project___

- is resurfacing, widening and resurfacing or construction of shoulder pavement
- is rural or is urban without curb and gutter
- resurfacing build-up is 3" or less

PATTERN DETAIL



PLAN VIEW

GENERAL NOTES

1. Treatment I:

   A. If trenching under sod is necessary to achieve the required 1" drop off, excavated turf and topsoil are to be used for filling voids and low areas at the edge of pavement or for flushing along the edge of sod. Excess material to be uniformly distributed over the shoulder.

   B. Payment for excavation of turf and topsoil and for back fill of this material under Treatment I is to be included in the contract unit price for Sodding, SY.

2. Treatment II:

   A. All borrow shall meet requirements for a "Select" material in accordance with Index 505 and Section 120 of the Standard Specifications.

   B. Borrow may be used in lieu of excavated turf and topsoil when economically feasible, however the upper 6" shall meet the requirements of Section 162 "Finished Soil Layer". There will be no additional payment for substituting borrow for excavated turf and topsoil.

   C. When exisstsing turf and topsoil do not meet the requirements of Section 162 "Finished Soil Layer", provide additive materials as necessary in the upper 6" to meet the requirements of Section 162. There will be no additional payment for additives.

   D. Payment for Treatment II will be under Finished Soil Layer. Seed, mulch fertilizer, water, sodding and borrow shall be paid for as separate items.

3. Special attention is to be directed to the construction of the required 1" drop-off at the edge of pavement.

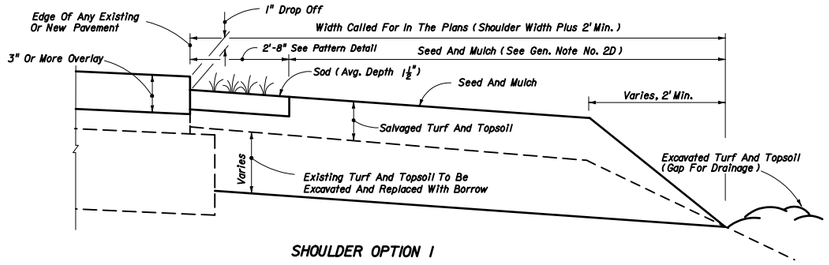
4. Activities such as clearing, grading, and excavating that will disturb one or more acres of land require coverage under the Generic Permit for Stormwater Discharge from Large and Small Construction Activities from the Florida Department of Environmental Protection, and implementation of appropriate pollution prevention measures to minimize erosion and sedimentation and properly manage stormwater.

5. Seeding:
   A. Wildflowers destroyed by shoulder sodding and turf operations are to be reestablished under the seeding rates prescribed for permanent wildflower #2 Group shown by table on Index 104.

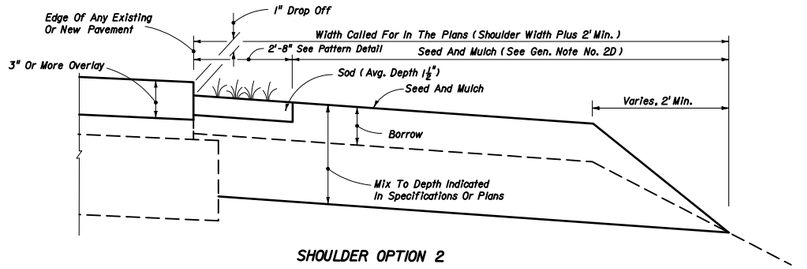
   B. Refer to Index 104 for Grass Seeding Rates and Seeding Rate Zones. Use seeding rates provided in Index 104 unless otherwise specified in the Contract Plans.

   C. All seeding shall be performed meeting the requirements of Section 570 of the Standard Specifications.

TREATMENT II



SHOULDER OPTION 1



SHOULDER OPTION 2

CRITERIA FOR USING TREATMENT II

Project___

- is resurfacing or construction of shoulder pavement
- is rural or is urban without curb and gutter
- resurfacing build-up is 3" or more

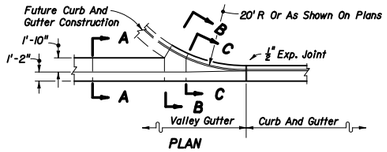
A SIMILAR TREATMENT MAY BE USED FOR PROJECTS THAT REQUIRE SHOULDER WIDENING. DETAILS ARE TO BE SHOWN IN THE PLANS.

2006 FDOT Design Standards

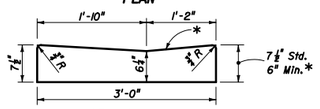
SHOULDER SODDING AND TURF ON EXISTING FACILITIES

Last Revision	Sheet No.
07/01/05	1 of 1
Index No.	
105	

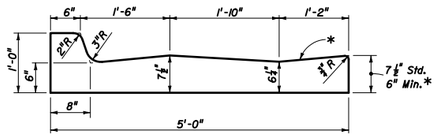
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS	
01/01/07	"TREATMENT I", add width dimension of the sod strip as "2 5/32 -8" " and the note "See Pattern Detail". "TREATMENT II", "SHOULDER OPTION I" and "SHOULDER OPTION II", delete notations "Seed And Mulch" and insert "Turf ". "GENERAL NOTES", note "1.B", delete the text of the note and substitute the following: "Payment for the sod, excavation of turf and topsoil and for back fill of this material under Treatment I is to be included in the contract unit price for Performance Turf, SY." Note "2 D", delete the second sentence and insert the following: "Sod and other materials for turf establishment shall be paid for as Performance Turf, SY".	Note "5", delete "Seeding" and insert "Turf Establishment". Note "5 B", delete the note. Note "5 C", renumber as "5 B". Also delete "seeding" and insert "turf establishment".



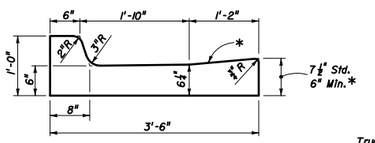
PLAN



SECTION AA



SECTION BB

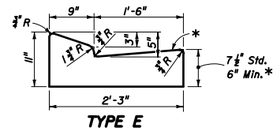


SECTION CC

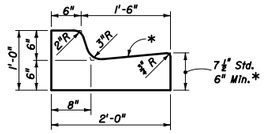
VALLEY GUTTER

* When used on high side of roadways, the cross slope of the gutter shall match the cross slope of the adjacent pavement. The thickness of the lip shall be 6", unless otherwise shown on plans.

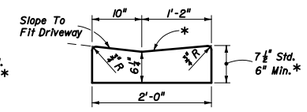
☑ Rotate entire section so that gutter cross slope matches slope of adjacent circulating roadway pavement.



TYPE E

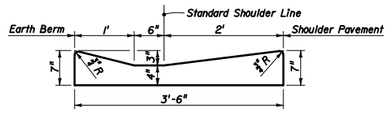


TYPE F

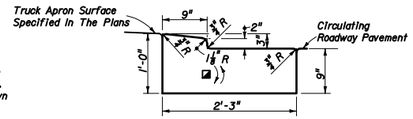


Note: To be paid for as parent curb.

DROP CURB

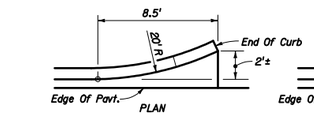


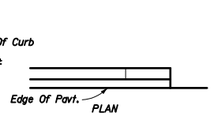
SHOULDER GUTTER

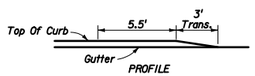


TRAFFIC BEARING SECTION FOR USE IN ROUNDABOUT CENTRAL ISLAND CONSTRUCTION

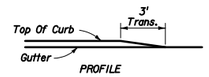
TYPE RA





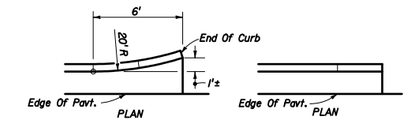


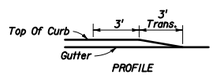
FLARED END



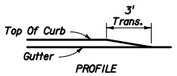
STRAIGHT END

CURB TYPE A





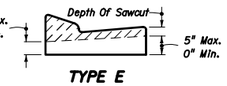
FLARED END



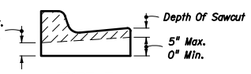
STRAIGHT END

CURB AND GUTTER TYPES E & F

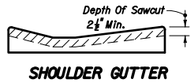
CURB AND GUTTER ENDINGS



TYPE E



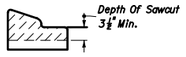
TYPE F



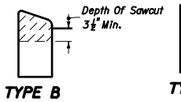
SHOULDER GUTTER

Sawcuts should be avoided within valley gutter and within curb and gutter endings.

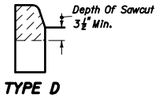
CONTRACTION JOINT IN CURB AND GUTTER



TYPE A



TYPE B

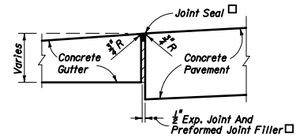


TYPE D

CONTRACTION JOINT IN CURB

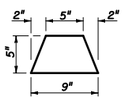
△ Applies to both high and low sides of pavement, low side shown. Applies to shoulder gutter only where adjoining traffic lanes.

CURB AND GUTTER AND TYPE A CURB ADJACENT TO FLEXIBLE PAVEMENT



☐ Applies to both high and low sides of pavement, low side shown.

EXPANSION JOINT BETWEEN GUTTER AND CONCRETE PAVEMENT



ASPHALTIC CONCRETE CURB

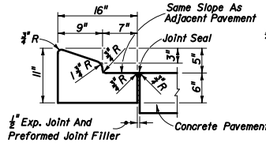
GENERAL NOTES

1. For curb, gutter and curb & gutter provide ⅛" - ½" contraction joints at 10' centers (max.). Contraction joints adjacent to concrete pavement on tangents and flat curves are to match the pavement joints, with intermediate joints not to exceed 10' centers. Curb, gutter and curb & gutter expansion joints shall be located in accordance with Section 520 of the standard specifications.

2. Ends of Curbs Types B and D shall transition from full to zero heights in 3'.

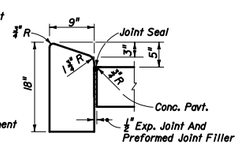
Note: For use adjacent to concrete or flexible pavement. For details depicting usage adjacent to flexible pavement, see diagram right. Expansion joint, preformed joint filler and joint seal are required between curb & gutter and concrete pavement only, see diagram right.

CONCRETE CURB AND GUTTER

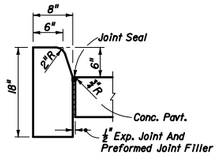


For details depicting usage adjacent to flexible pavement, see diagram right.

TYPE A



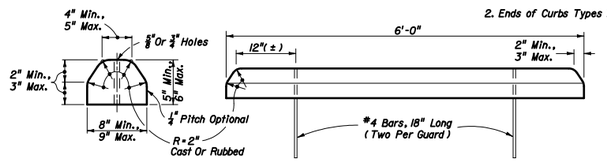
TYPE B



TYPE D

Note: For use adjacent to concrete or flexible pavement, concrete shown. Expansion joint, preformed joint filler and joint seal are required between curbs and concrete pavement only, see diagram right.

CONCRETE CURB



CONCRETE BUMPER GUARD

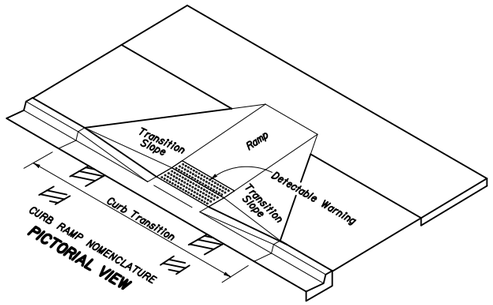
2006 FDOT Design Standards

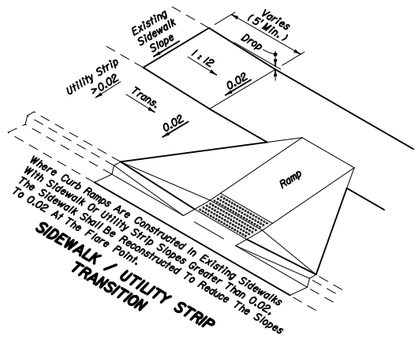
CURB & CURB AND GUTTER

Last Revision	Sheet No.
00	1 of 1

Index No. 300

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS





GENERAL NOTES

1. Public sidewalk curb ramps shall be constructed in the public right of way at locations that will provide continuous unobstructed pedestrian circulation paths to pedestrian areas, elements and facilities in the public right of way and to accessible pedestrian routes on adjacent sites. Curbed facilities with sidewalks and those without sidewalks are to have curb ramps constructed at all street intersections and at turnouts that have curbed returns. Partial curb returns shall extend to the limit prescribed by Index No. 515 to accommodate curb ramps. Ramps constructed at locations without sidewalks shall have a landing constructed at the top of each ramp, see Sheet 5.

2. The location and orientation of curb ramps shall be as shown in the plans.

3. Curb ramp running slopes at unrestrained sites shall not be steeper than 1:12 and cross slope shall be 0.02 or flatter. Transition slopes shall not be steeper than 1:12.

   When altering existing pedestrian facilities where existing site development precludes the accommodation of a ramp slope of 1:12, a running slope between 1:12 and 1:10 is permitted for a rise of 6" maximum and a running slope of between 1:10 and 1:8 is permitted for a rise of 3" maximum. Where compliance with the requirements for cross slope cannot be fully met, the minimum feasible cross slope shall be provided.

   Ramp running slope is not required to exceed 8' in length, except at sites where the plans specify a greater length.

4. If a curb ramp is located where pedestrians must walk across the ramp, then the walk shall have transition slopes to the ramp; the maximum slope of the transitions shall be 1:12. Ramps with curb returns may be used at locations where other improvements provide guidance away from that portion of curb perpendicular to the sidewalk; improvements for guidance are not required at curb ramps for linear pedestrian traffic.

5. Curb ramp detectable warning surfaces shall extend the full width of the ramp and in the direction of travel 24" from the back of curb. Detectable warning surfaces shall be constructed in accordance with Specification 527. See Sheet 6 of 6 for detectable warning layouts. Transition slopes are not to have detectable warnings.

6. Where a curb ramp is constructed within existing curb, curb and gutter and/or sidewalk, the existing curb or curb and gutter shall be removed to the nearest joint beyond the curb transitions or to the extent that no remaining section of curb or curb and gutter is less than 5' long. The existing sidewalk shall be removed to the nearest joint beyond the transition slope or walk around or to the extent that no remaining section of sidewalk is less than 5' long. For details of Concrete Sidewalk See Index 310.

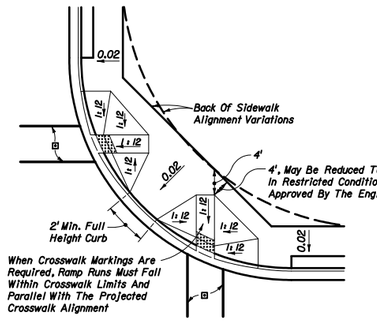
7. Alpha-numeric identifications are for reference (plans, permits, etc.).

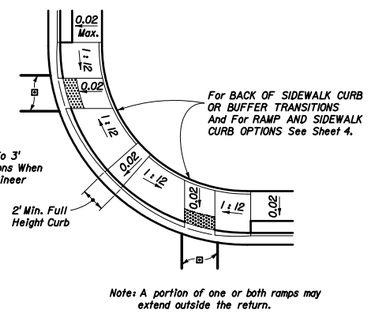
8. Public sidewalk curb ramps are to be paid for as follows:
   Ramps, reconstructed sidewalks, walk around sidewalks, sidewalk landings and sidewalk curbs are to be paid for under the contract unit price for Sidewalk Concrete, (__" Thick), SY. Curb transitions and reconstructed curbs are to be paid for under the contract unit price for the parent curb, i.e., Curb Conc., (Type __), LF or Curb and Gutter Conc., (Type __), LF.

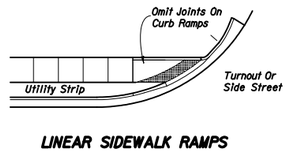
   When a separate pay item for the removal and disposal of existing curb, curb and gutter, and/or sidewalk is not provided in the plans, the cost of removal and disposal of these features shall be included in the contract unit price for new curb, curb and gutter and/or sidewalk respectively.

9. Acceptance Criteria for Detectable Warnings:
   (a) The ramp detectable warning surface shall be complete and uniform in color and texture
   (b) 90% of the individual truncated domes must comply with the design criteria
   (c) There may be no more than 4 non-complying domes in any one square foot of surface
   (d) No two adjacent domes may be non-compliant
   (e) Surface may not deviate more than 0.10" from a true plane

10. All sidewalk surfaces, ramp surfaces, and landings with a cross slope shown in this index to be 0.02 shall be 0.02 maximum. All ramp surfaces and ramp transition slopes with a slope shown in this index to be 1:12 shall be 1:12 maximum.





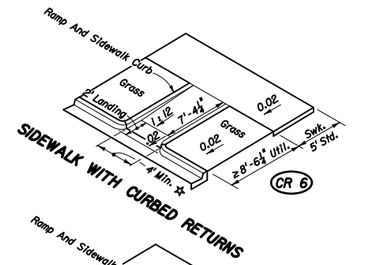


LINEAR SIDEWALK RAMPS

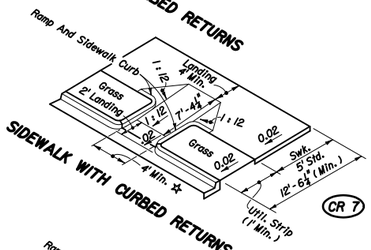
TYPICAL PLACEMENT OF PUBLIC SIDEWALK CURB RAMPS AT CURBED RETURNS

2006 FDOT Design Standards	Last Revision	Sheet No.
PUBLIC SIDEWALK CURB RAMPS	07/01/05	1 of 6
	Index No.	304

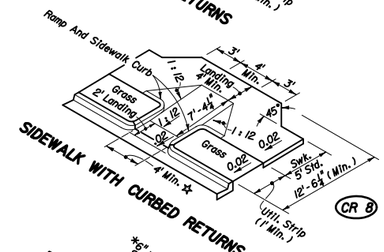
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	Detail in lower left corner, the note "When crosswalk markings - - " is deleted and the following note substituted: "When crosswalk markings are required, ramp runs must fall within crosswalk limits and where practical, be parallel with the projected crosswalk alignment. The bottom of the ramp beyond the curb line shall have a clear space 48" minimum within the markings of a marked crosswalk. If no crosswalk markings are present, the bottom of the ramp beyond the curb ramp shall have a clear space 48" minimum outside active traffic lanes."



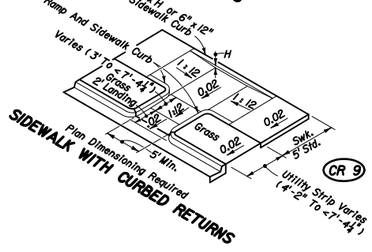
SIDEWALK WITH CURBED RETURNS



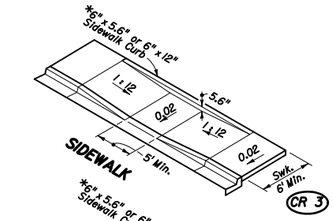
SIDEWALK WITH CURBED RETURNS



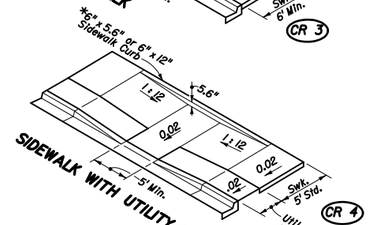
SIDEWALK WITH CURBED RETURNS



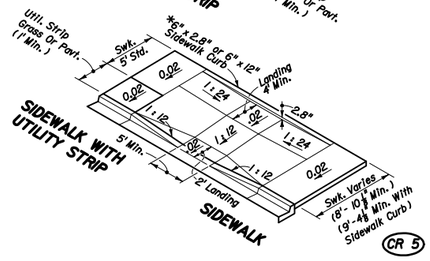
SIDEWALK WITH CURBED RETURNS



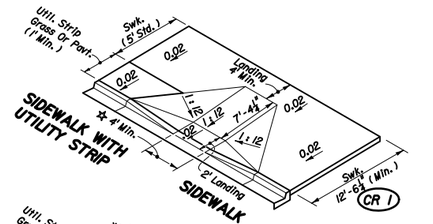
SIDEWALK



SIDEWALK WITH UTILITY STRIP

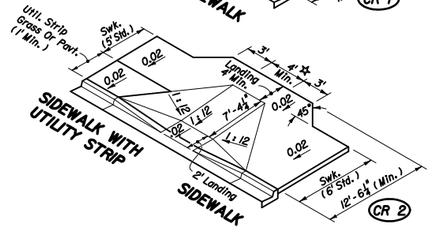


SIDEWALK WITH UTILITY STRIP



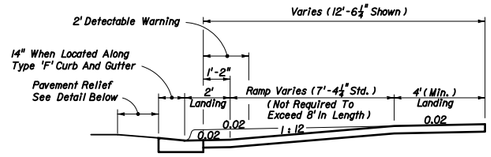
SIDEWALK WITH UTILITY STRIP

SIDEWALK



SIDEWALK WITH UTILITY STRIP

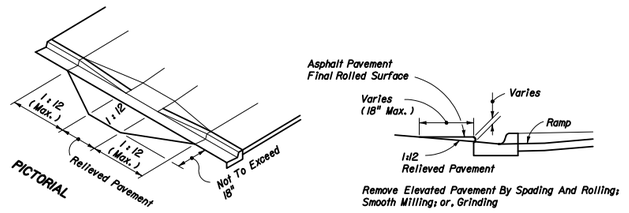
SIDEWALK



SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION

* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

☆ Ramp Widths For Curb Ramps CR 1, CR 2, CR 6, CR 7, And CR 8 May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer.

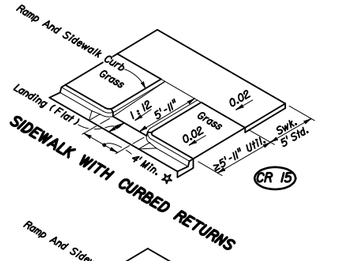


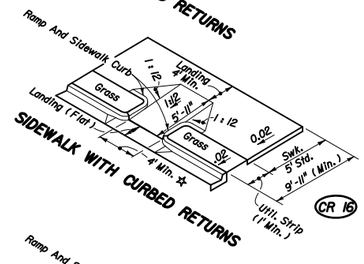
PAVEMENT RELIEF AT LIP OF CURB

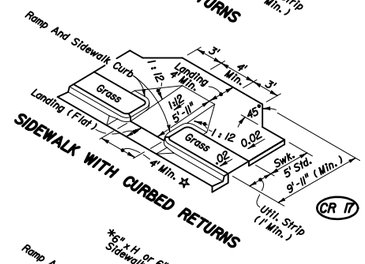
DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE NOT RESTRICTED BY RIGHT OF WAY

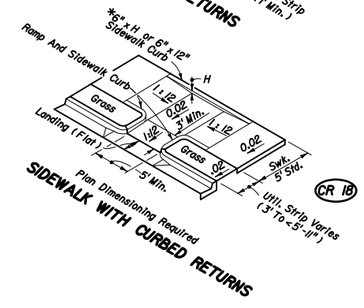
	2006 FDOT Design Standards	Last Revision 07/01/05	Sheet No. 2 of 6
	PUBLIC SIDEWALK CURB RAMPS		Index No. 304

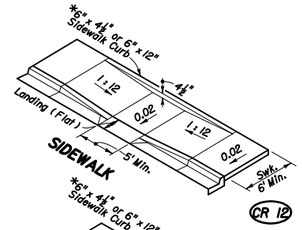
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

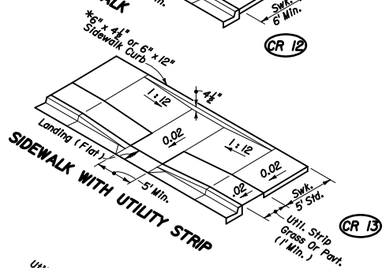


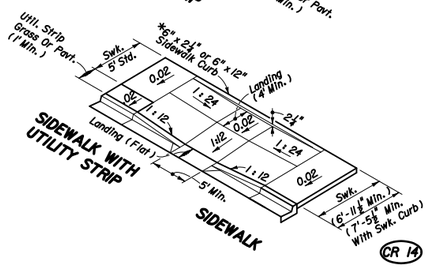


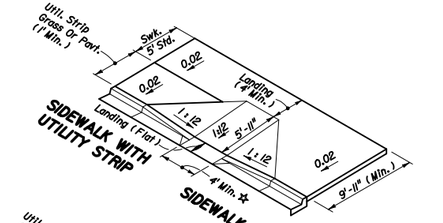


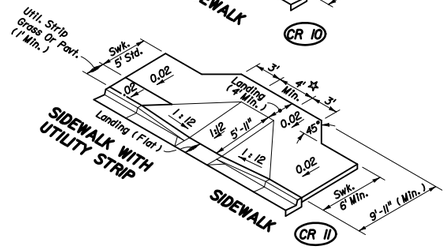


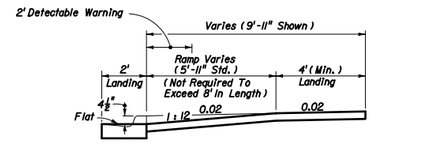












SECTION THROUGH RAMP RUN AND LANDINGS WITH UPPER LANDING AT NORMAL SIDEWALK ELEVATION

☆ Ramp Widths For Curb Ramps CR 10, CR 11, CR 15, CR 16, And CR 17 May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer.

* For BACK OF SIDEWALK CURB OR BUFFER TRANSITION And For RAMP AND SIDEWALK CURB OPTIONS See Sheet 4.

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS WHERE RAMP AND LANDING DEPTH ARE RESTRICTED BY RIGHT OF WAY

	2006 FDOT Design Standards	Last Revision	Sheet No.
	PUBLIC SIDEWALK CURB RAMPS	07/01/05	3 of 6
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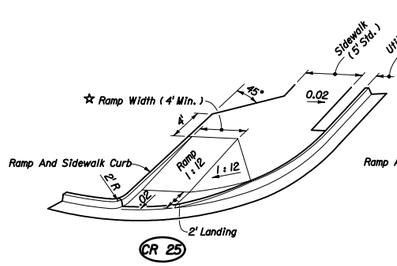
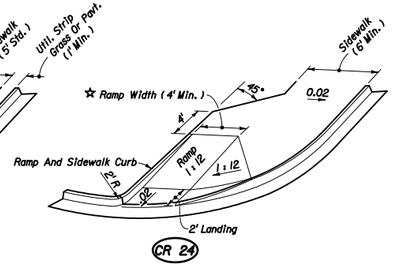
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



CR 25



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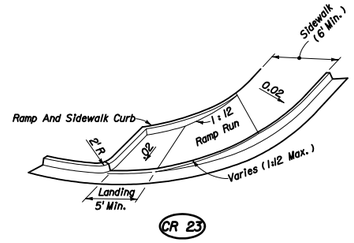

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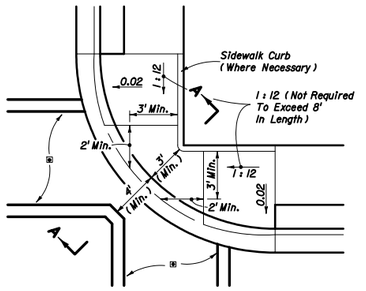
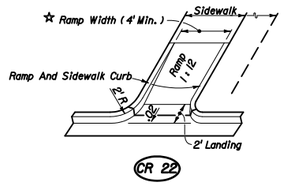


PLAN



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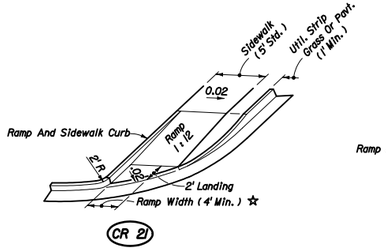
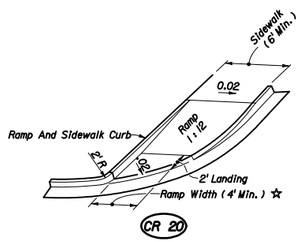
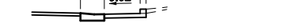


CR 21



CR 20

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK CURB RAMPS FOR LINEAR PEDESTRIAN TRAFFIC

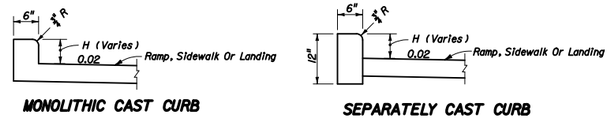


SECTION AA

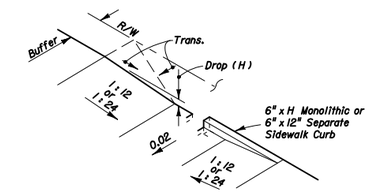
CR 26

DIMENSIONAL FEATURES FOR PUBLIC SIDEWALK COMBINED CORNER RAMPS UNDER CONDITIONS OF INFEASIBILITY

☆ Ramp Widths For Curb Ramps CR 20, CR 21, CR 22, CR 24, and CR 25 May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer.



RAMP AND SIDEWALK CURB OPTIONS

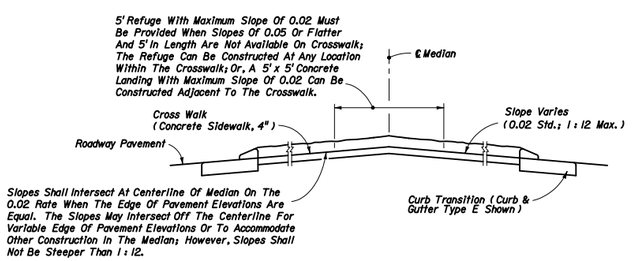


Construct Sidewalk Curb In Absence Of Adequate Buffer, Maintainable Surface Contour, Abuting Structure, Or When Called For In The Plans Or Standards

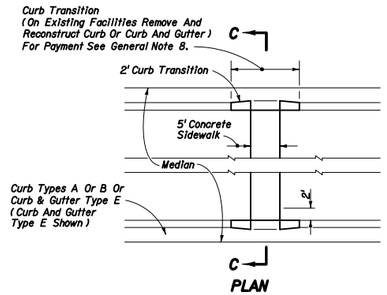
BACK OF SIDEWALK CURB OR BUFFER TRANSITION

	2006 FDOT Design Standards	Last Revision	Sheet No.
	PUBLIC SIDEWALK CURB RAMPS	07/01/05	4 of 6
		Index No.	304

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

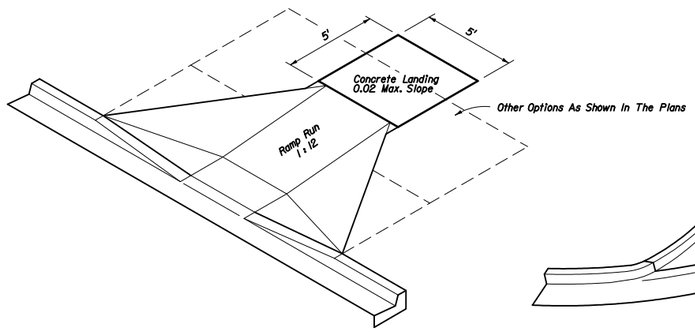


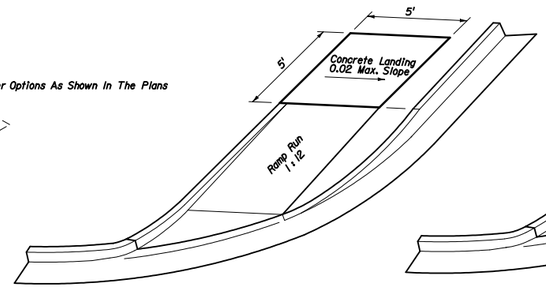
SECTION CC

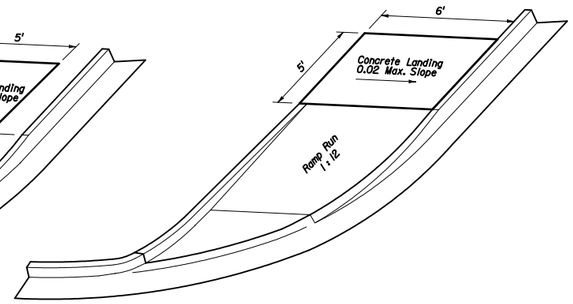


PLAN

MEDIAN CROSSWALKS



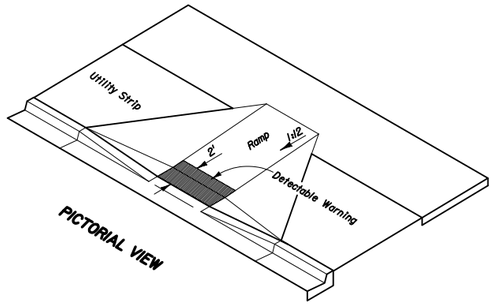




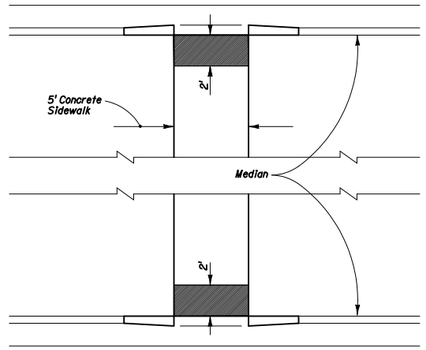
LANDINGS FOR RAMPS WITHIN PUBLIC RIGHT OF WAY CONSTRUCTED AT LOCATIONS WHERE FUTURE SIDEWALKS ARE PROPOSED, WHERE STABLE SURFACES OTHER THAN SIDEWALKS ARE PART OF A CONTINUOUS PASSAGE OR WHERE A CURB FALLS ALONG THE CIRCULATION PATH TO PEDESTRIAN ROUTES ON ADJACENT SITES

2006 FDOT Design Standards	Last Revision	Sheet No.
PUBLIC SIDEWALK CURB RAMPS	07/01/05	5 of 6
	Index No.	
	304	

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	"MEDIAN CROSSWALKS", "PLAN", As an alternative to the curb transitions shown, the designer may detail the curb to extend along the crosswalk in similar manner to a CR 6 Curb Ramp.

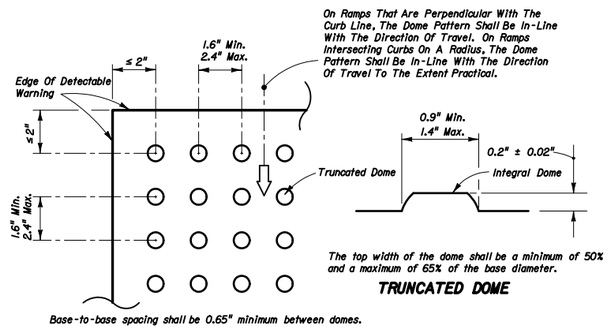


PICTORIAL VIEW



PLAN

On Ramps That Are Perpendicular With The Curb Line, The Dome Pattern Shall Be In-Line With The Direction Of Travel. On Ramps Intersecting Curbs On A Radius, The Dome Pattern Shall Be In-Line With The Direction Of Travel To The Extent Practical.



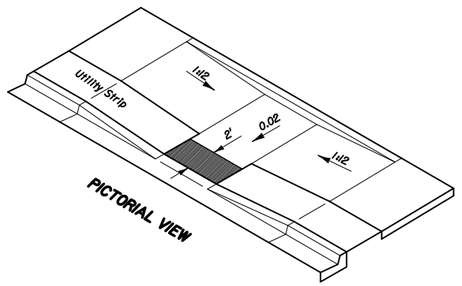
The top width of the dome shall be a minimum of 50% and a maximum of 65% of the base diameter.

TRUNCATED DOME

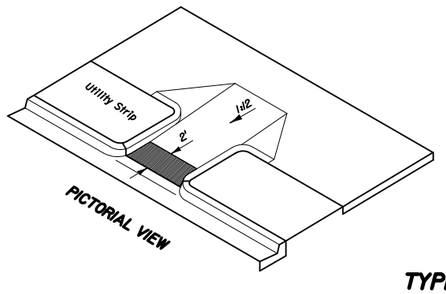
PLAN VIEW

All Sidewalk Curb Ramps Shall Have Detectable Warning Surfaces That Extend The Full Width Of The Ramp And In The Direction Of Travel 24 Inches (610 mm) From The Back Of Curb.

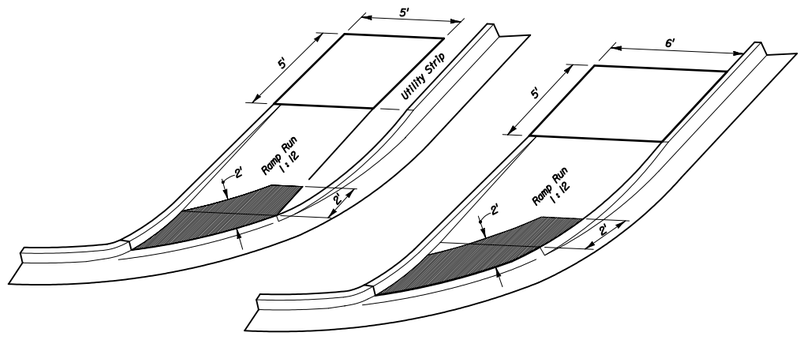
CURB RAMP DETECTABLE WARNING DETAIL



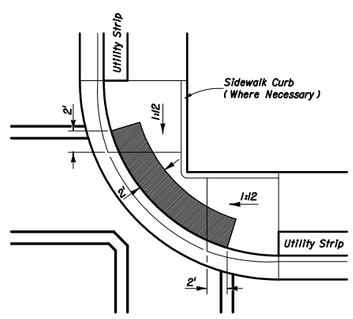
PICTORIAL VIEW



PICTORIAL VIEW



PICTORIAL VIEWS

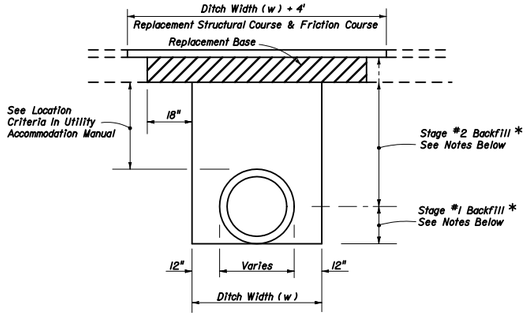


PLAN

TYPICAL PLACEMENT OF DETECTABLE WARNING ON CURB RAMPS

	2006 FDOT Design Standards	Last Revision 07/01/05	Sheet No. 6 of 6
	PUBLIC SIDEWALK CURB RAMPS		Index No. 304

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



FLEXIBLE PAVEMENT NOTES

PAVEMENT REMOVAL AND REPLACEMENT

Pavement shall be mechanically sawed.

The replacement asphalt shall match the existing structural and friction courses for type and thickness.

The new base materials shall be either of the same type and composition as the materials removed or of equal or greater structural adequacy (See Index No. 514).

BACKFILL

COMPACTED AND STABILIZED FILL OPTION

Backfill material shall be placed in accordance with Section 125 of the Standard Specifications.

In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.

In Stage #2, construct compacted fill along the sides of the pipe and up to the bottom of the base, with the upper 12" receiving Type B Stabilization. In lieu of Type B Stabilization, the Contractor may construct using Optional Base Group 3.

* FLOWABLE FILL OPTION

If compaction can not be achieved through normal mechanical methods then flowable fill may be used.

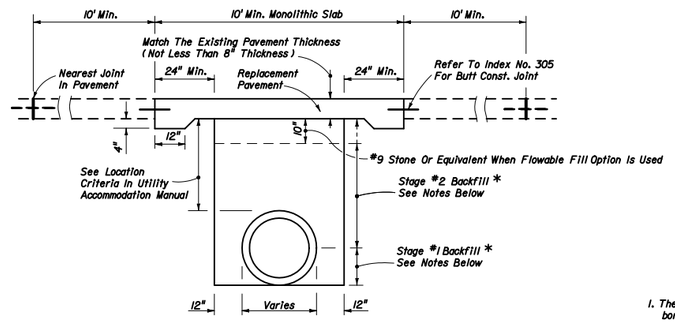
Flowable fill is to be placed in accordance with Section 121 of the Specifications, as approved by the Engineer.

Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.

In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.

In Stage #2, place flowable fill to the bottom of the existing base course.

FLEXIBLE PAVEMENT CUT



RIGID PAVEMENT NOTES

PAVEMENT REMOVAL AND REPLACEMENT

High early strength cement concrete (3000 psi) meeting the requirements of Standard Specification 346 shall be used for rigid pavement replacement.

Pavement shall be mechanically sawed and restored to conform with existing pavement joints within 12 hours. (See Index No. 305)

GRANULAR BACKFILL

Any edgedrain system that is removed shall be replaced with the same type materials. Any edgedrain system that is damaged shall be repaired with methods approved by the Engineer.

Fill material shall be placed in accordance with the Standard Specifications. Fill material shall be special select soil in accordance with Index No. 505.

In Stage #1, construct compacted fill beneath the haunches of the pipe, using mechanical tamps suitable for this purpose. This compaction applies to the material placed beneath the haunches of the pipe and above any bedding.

In Stage #2, construct fill along the sides of the pipe and up to the bottom of replacement pavement.

* FLOWABLE FILL OPTION

If mechanical compaction can not be achieved through normal mechanical methods then flowable fill may be used.

Flowable fill is to be placed in accordance with Section 121 of the Specifications, as approved by the Engineer.

Do not allow the utility being installed to float. If a method is provided to prevent flotation from occurring, Stages #1 and #2 can be combined, if approved by the Engineer.

In Stage #1, place flowable fill midway up on both sides of the utility. Allow to harden before placing Stage #2.

In Stage #2, place flowable fill to the bottom of the stone layer.

RIGID PAVEMENT CUT

GENERAL NOTES

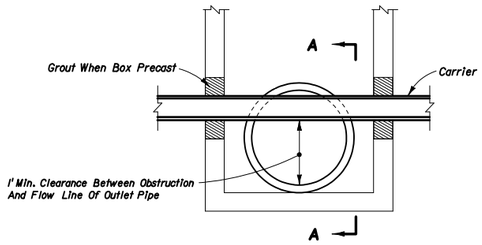
1. The details provided in this standard index apply to cases in which jack and bore or directional boring methods are not required by the Engineer.
2. Flowable fill shall not be placed directly over loose, or high plastic, or muck material (see Index 505) which will cause settlement due to fill weight. Where highly compressible material exists, the amount, shape and depth of flowable fill must be engineered to prevent pavement settlement.
3. These details do not apply to utility cuts longitudinal to the centerline of the roadway which may require the additional use of geotextiles, special bedding and backfill, or other special requirements.
4. Method of construction must be approved by the Engineer.
5. Some pipe may require special granular backfill up to 6" above top of pipe. Geotextiles may be required to encapsulate the special granular material.
6. Where asphalt concrete overlays exist over full slab concrete pavement, the replacement pavement shall have an overlay constructed over the replacement slab. The overlay shall match the existing asphalt pavement thickness. The replacement friction course shall match the existing friction course, except structural course may be used in lieu of dense graded friction course.

   Existing broken and seated pavements shall be treated as flexible pavements.
7. All shoulder pavement, curb, curb and gutter, and their substructure disturbed by utility trench cut construction shall be restored in kind.
8. The use of flowable fill to reduce the time traffic is taken off a facility is acceptable but must have prior approval by the Engineer. Flowable fill use is allowed only when properly engineered for pavement crossings, whether straight or diagonal, and shall not be installed for significant depths or lengths. The maximum length shall be fifty (50) feet and a maximum depth of six (6) feet unless supported by an engineering document prepared by a registered professional engineer that specializes in soils engineering. The engineering document shall address the evaluation of local groundwater flow interruption and settlement potential.
9. Excavatable flowable fill is to be used when the flowable fill option is selected.
10. When approved by the Engineer, in lieu of the pavement and base, non-excavatable flowable fill may be used for manhole stabilization and ring and cover adjustments. Excavatable flowable fill shall not be used within the limits of the pavement and base.

TRENCH CUTS AND RESTORATIONS ACROSS ROADWAYS

	2006 FDOT Design Standards	Last Revision 04	Sheet No. 1 of 3
	MISCELLANEOUS UTILITY DETAILS		Index No. 307

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

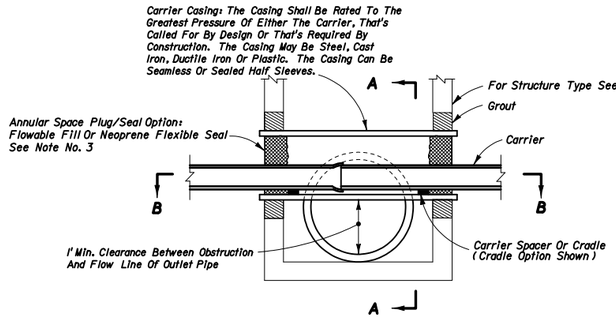


SECTION LONGITUDINAL TO CARRIER PIPE

No Joints Allowed Within Structure

(Non-Pressure Or Non-Fluid Carrier Installations)

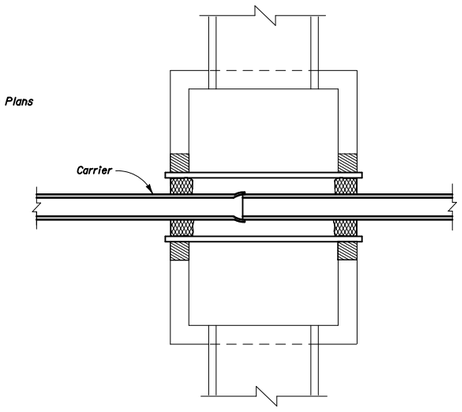
UTILITY CONFLICT CONDITION I



SECTION LONGITUDINAL TO CARRIER PIPE

(Pressure Or Fluid Carrier Installations)

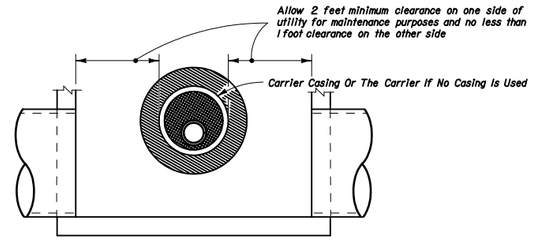
UTILITY CONFLICT CONDITION II



SECTION BB

NOTES FOR UTILITY CONFLICT PIPE

1. These details are for construction field expediency to resolve utility conflicts that cannot be remedied by relocation. For conflicts determined during design, use the construction shop drawings for structure details.
2. Concrete used in conflict structures shall be as specified in ASTM C478. 4000 psi may be used in lieu of Class I concrete.
3. Maximum opening for pipe shall be the pipe OD plus 6". Mortar used to seal the pipe into the opening will be of such mix that shrinkage will not cause leakage into or out of the structure.
4. If the conflict structure is round or there are multiple inlet or outlet pipes, then the wall section should be reviewed for strength.
5. If during the plans design or construction process it is determined that a domestic water supply line must pass though a storm drain structure, it must be shown on the design or construction plans and submitted to the Florida Department of Environmental Protection (FDEP) Administrator For Drinking Water in Tallahassee for review and comment. This index provides accepted methods for addressing conflicts when and where they cannot be reasonably avoided. To be submitted along with the plans shall be a justification describing inordinate cost and the impracticality of avoidance. If identified, properly justified, and accomplished in accordance with this Index, approval is granted. Upon request, the Utility Agency Owner (UAO) must provide support data on the cost of relocation or adjustment to the FDOT for submittal to the FDEP. Failure to comply may result in work stoppage by FDEP.



DESIGNERS NOTE

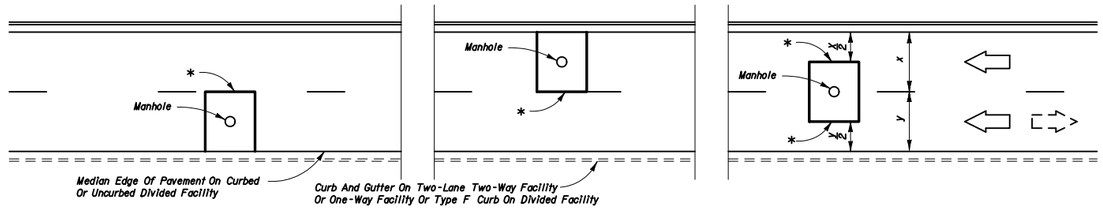
"Sumped" Conflict Manholes Shall Not Be Used Unless The System Is Hydraulically Designed To Account For The Headloss Generated If The Sump Is Completely Blocked

SECTION AA

UTILITY CONFLICT PIPES THRU STORM SEWER STRUCTURES

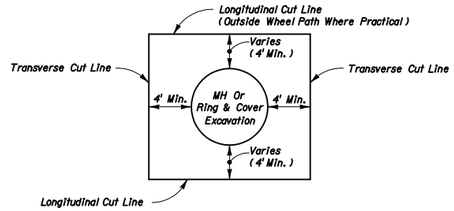
	2006 FDOT Design Standards	Last Revision	Sheet No.
	MISCELLANEOUS UTILITY DETAILS	07/01/05	2 of 3
		Index No.	307

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	"NOTES FOR UTILITY CONFLICT PIPE", Note 5, delete the last sentence.



* Longitudinal Cut Lines For Both Curbed And Uncurbed Facilities Must Coincide With A Regular Seam Or Mid-Lane Point In Order To Be Outside The Wheel Path

PLAN VIEW
FOR TWO OR MORE LANES (TWO LANES SHOWN)



PARTIAL CUTS FOR RING AND COVER ADJUSTMENTS

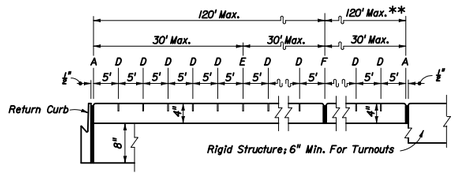
NOTES

1. No irregular seams are permitted. All seams must be clean sawed.
2. Pavement cut seams for underground utility structures in rigid pavement are the same longitudinally, but the transverse seams shall extend to the nearest existing joint.
3. See Sheet 1 for replacement pavement.

NON-TRENCH PAVEMENT CUTS FOR UNDERGROUND UTILITY STRUCTURES IN PAVEMENT

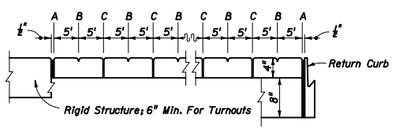
	2006 FDOT Design Standards	Last Revision 04	Sheet No. 3 of 3
	MISCELLANEOUS UTILITY DETAILS		Index No. 307

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



**"E" Joint(s) Required When Length Exceeds 30'

SAWED JOINTS



OPEN JOINTS

EXAGGERATED SCALE

LONGITUDINAL SECTION

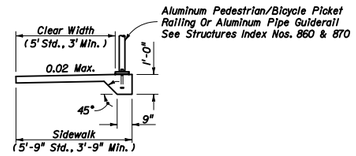
SIDEWALK JOINTS

JOINT LEGEND

A- ½" Expansion Joints (Preformed Joint Filler)
B- ½" Dummy Joints, Tooled
C- ½" Formed Open Joints
D- ⅜" Saw Cut Joints, 1¼" Deep (96 Hour) Max. 5' Centers
E- ⅜" Saw Cut Joints, 1¼" Deep (12 Hour) Max. 30' Centers
F- ½" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.
G- Cold Joint With Bond Breaker, Tooled

NOTES FOR CONCRETE SIDEWALK ON CURBED ROADWAYS

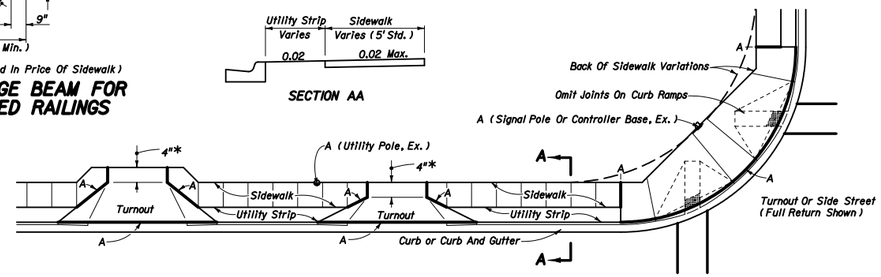
1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications except for public sidewalk curb ramp runs which shall be finished in accordance with Index No. 304.
2. Bond breaker material can be any impermeable coated or sheet membrane or preformed material having a thickness of not less than 6 mils nor more than ½".
3. For public sidewalk curb ramps see Index No. 304.
4. For turnouts see Index No. 515.
5. Construct sidewalks with 1' thick Edge Beam through the limits of any surface mounted Aluminum Pedestrian/Bicycle Picket Railing or Pipe Guiderail shown in the plans.
6. Sidewalk shall be paid for under the contract unit price for Sidewalk Concrete (___ Thick), S.Y.



(Cost Of Edge Beam To Be Included In Price Of Sidewalk)

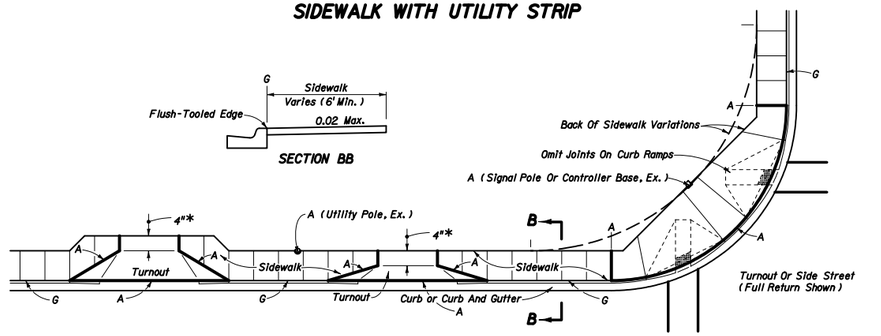
SIDEWALK WITH EDGE BEAM FOR SURFACE MOUNTED RAILINGS

SECTION AA



SIDEWALK WITH UTILITY STRIP

SECTION BB



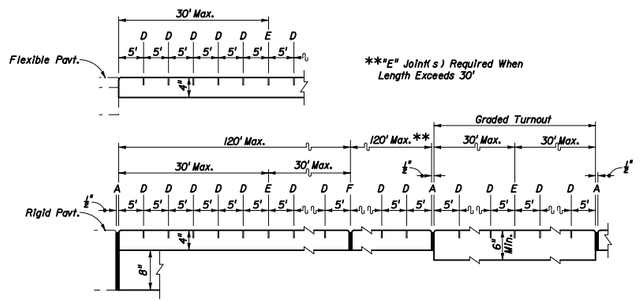
SIDEWALK WITHOUT UTILITY STRIP

* 4', May Be Reduced To 3' In Restricted Conditions When Approved By The Engineer

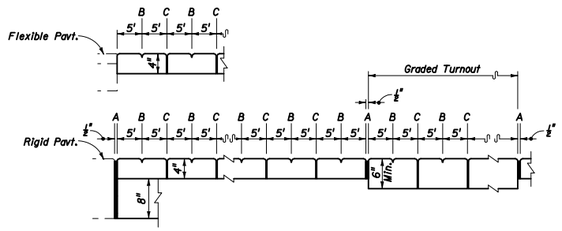
CONCRETE SIDEWALK FOR CURBED ROADWAYS

	2006 FDOT Design Standards	Last Revision 07/01/05	Sheet No. 1 of 2
	CONCRETE SIDEWALK		Index No. 310

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	"SIDEWALK WITH UTILITY STRIP" and "SIDEWALK WITHOUT UTILITY STRIP", width of the sidewalk walkarounds at driveways delete " 4" " and insert " 4'".



SAWED JOINTS



OPEN JOINTS

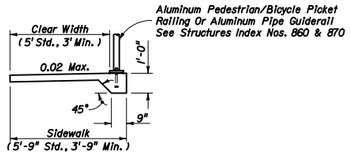
EXAGGERATED SCALE

LONGITUDINAL SECTIONS

SIDEWALK JOINTS

JOINT LEGEND

A- ½" Expansion Joints (Preformed Joint Filler)
B- ½" Dummy Joints, Tooled
C- ½" Formed Open Joints
D- ⅜" Saw Cut Joints, 1¼" Deep (96 Hour) Max. 5' Centers
E- ⅜" Saw Cut Joints, 1¼" Deep (12 Hour) Max. 30' Centers
F- ½" Expansion Joint When Run Of Sidewalk Exceeds 120'. Intermediate locations when called for in the plans or at locations as directed by the Engineer.



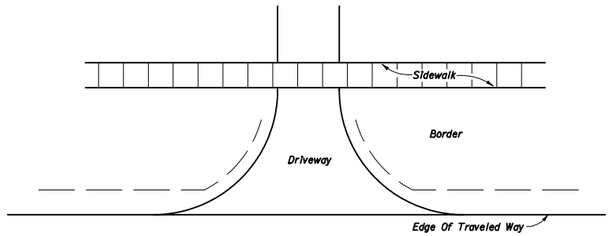
(Cost Of Edge Beam To Be Included In Price Of Sidewalk)

SIDEWALK WITH EDGE BEAM FOR SURFACE MOUNTED RAILINGS

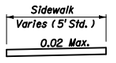
NOTES FOR CONCRETE SIDEWALKS ON UNCURBED ROADWAYS

1. Sidewalks shall be constructed in accordance with Section 522 of the FDOT Standard Specifications.
2. Sidewalks adjoining driveways 24' and wider, right in-right out composite driveways and side roads and streets shall have a detectable warning surface that extends the full width of the sidewalk and in the direction of travel 24" (610 mm) from the edge of driveways and edge of side roads and streets. Detectable warning surfaces shall conform to the requirements described in the General Notes on Index No. 304.

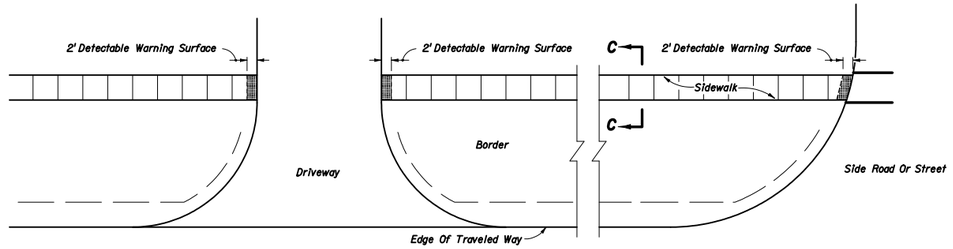
   For sidewalks continuous through driveways, detectable warning surfaces are not required.
3. For turnouts see Index No. 515.
4. Construct sidewalks with 1' thick Edge Beam through the limits of any surface mounted Aluminum Pedestrian/Bicycle Picket Railing or Pipe Guiderail shown in the plans.
5. Sidewalk shall be paid for under the contract unit price for Sidewalk Concrete (___ Thick), SY.



CONTINUOUS SIDEWALK



SECTION CC



DISCONTINUOUS SIDEWALK

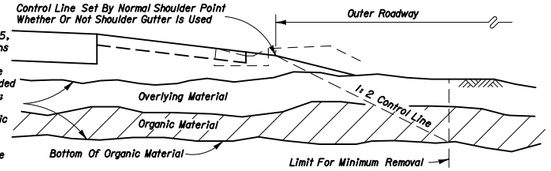
PLAN

CONCRETE SIDEWALK FOR UNCURBED ROADWAYS

	2006 FDOT Design Standards	Last Revision 07/01/05	Sheet No. 2 of 2
	CONCRETE SIDEWALK		Index No. 310

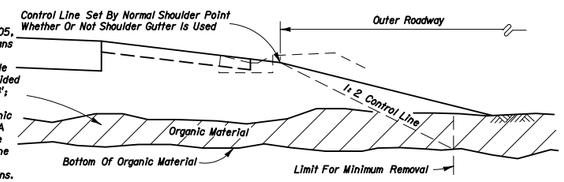
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

Remove Overlying Material And Organic Material Within The Limits Shown And Backfill In Accordance With Index No. 505, Unless Otherwise Called For In The Plans Or Directed Otherwise By The District Geotechnical Engineer; The Limits Include Full Median Width When Applied To Divided Facilities With Median Widths Up To 64'; When Median Width Is Greater Than 64' And For Bifurcated Roadways The Organic Material Removal Limits Will Be Set By A 1 : 2 Control Line Complimentary To The Outer Roadway That Will Accommodate One Future Median Lane On Each Roadway Unless Specified Otherwise By The Plans.



WITH OVERBURDEN - HALF SECTION

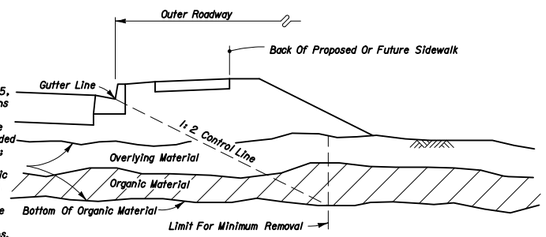
Remove Overlying Material And Organic Material Within The Limits Shown And Backfill In Accordance With Index No. 505, Unless Otherwise Called For In The Plans Or Directed Otherwise By The District Geotechnical Engineer; The Limits Include Full Median Width When Applied To Divided Facilities With Median Widths Up To 64'; When Median Width Is Greater Than 64' And For Bifurcated Roadways The Organic Material Removal Limits Will Be Set By A 1 : 2 Control Line Complimentary To The Outer Roadway That Will Accommodate One Future Median Lane On Each Roadway Unless Specified Otherwise By The Plans.



WITHOUT OVERBURDEN - HALF SECTION

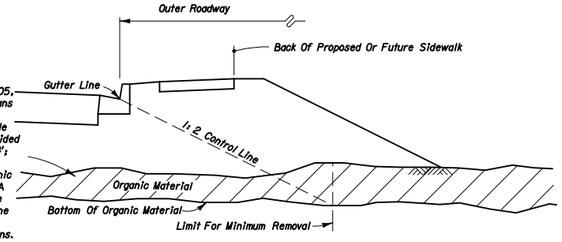
IN RURAL CONSTRUCTION

Remove Overlying Material And Organic Material Within The Limits Shown And Backfill In Accordance With Index No. 505, Unless Otherwise Called For In The Plans Or Directed Otherwise By The District Geotechnical Engineer; The Limits Include Full Median Width When Applied To Divided Facilities With Median Widths Up To 64'; When Median Width Is Greater Than 64' And For Bifurcated Roadways The Organic Material Removal Limits Will Be Set By A 1 : 2 Control Line Complimentary To The Outer Roadway That Will Accommodate One Future Median Lane On Each Roadway Unless Specified Otherwise By The Plans.



WITH OVERBURDEN - HALF SECTION

Remove Overlying Material And Organic Material Within The Limits Shown And Backfill In Accordance With Index No. 505, Unless Otherwise Called For In The Plans Or Directed Otherwise By The District Geotechnical Engineer; The Limits Include Full Median Width When Applied To Divided Facilities With Median Widths Up To 64'; When Median Width Is Greater Than 64' And For Bifurcated Roadways The Organic Material Removal Limits Will Be Set By A 1 : 2 Control Line Complimentary To The Outer Roadway That Will Accommodate One Future Median Lane On Each Roadway Unless Specified Otherwise By The Plans.



WITHOUT OVERBURDEN - HALF SECTION

IN URBAN CONSTRUCTION

REMOVAL OF ORGANIC MATERIAL

GENERAL NOTES

1. All details shown on this index for removal of organic and plastic materials apply unless otherwise shown on the plans.
2. Utilization of excavated materials shall be in accordance with Index No. 505.
3. Where organic or plastic material is undercut, backfill shall be made of suitable material in accordance with Index No. 505, unless otherwise shown on the plans.
4. The term "Plastic Material" used in this index in conjunction with removal of plastic soil is as defined under soil classifications for Plastic (P) and High Plastic (H) on Index No. 505.
5. The term "Organic Material" as used on this index is defined as any soil which has an average organic content greater than five (5.0) percent, or an individual organic content test result which exceeds seven (7.0) percent. Organic material shall be removed as shown on this index and the plans unless directed otherwise by the District Geotechnical Engineer.

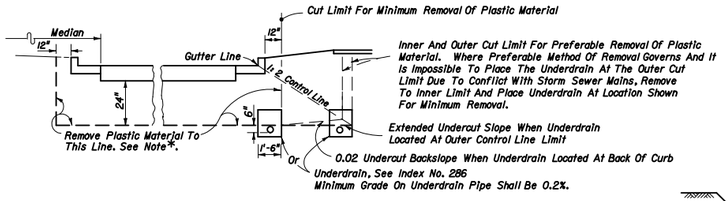
   Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the No. 4 sieve.
6. The normal depth of side ditches shall be 3.5' below the shoulder point except in special cases.
7. In municipal areas, where underdrain is to be constructed beneath the proposed pavement, the grade of the underdrain filter material will not extend above the bottom of the stabilized section of the subgrade. Gradation of the filter material shall conform to FDOT specifications. Minimum grade on underdrain pipe shall be 0.2%.
8. See Index No. 506 for miscellaneous earthwork details.

DESIGN NOTES

1. At locations where organic material or other soft soil deposits persists to such depth that removal is impractical, the construction of a geosynthetic foundation over those soils should be considered. The Engineer of Record should request guidance from the District Geotechnical Engineer and make a geosynthetic foundation design in accordance with Index No. 501 when pursuing geosynthetic alternates.
2. The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated specify in the plans the limits of removal of organic and plastic materials necessary to accommodate anticipated widening.

	2006 FDOT Design Standards	Last Revision 02	Sheet No. 1 of 2
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	REMOVAL OF ORGANIC AND PLASTIC MATERIAL		Index No. 500

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



HALF SECTION

NOTES: Refer to roadway cross sections to determine whether minimum or preferable removal is used.

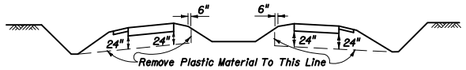
*Where frequency of median breaks indicates that it is impractical to leave plastic material in the median, the designer may elect to indicate total removal of this material. If during construction it becomes apparent, due to normal required construction procedures, that it is impractical to leave the plastic material in the median, total removal of this material shall be approved by the Engineer.

REMOVAL OF PLASTIC MATERIAL AND LOCATION OF UNDERDRAIN IN URBAN CONSTRUCTION

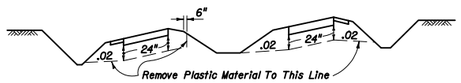
At locations where plastic material is being removed, the side ditches must be at least as deep as the undercut plane.

Where paved side ditches are used in areas of removal of plastic material, the top of the ditch pavement must be no higher than the undercut plane.

MISCELLANEOUS DETAILS

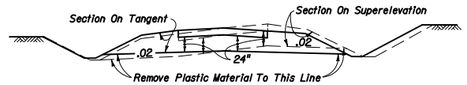


TYPICAL CUT SECTION ON TANGENT



TYPICAL CUT SECTION ON SUPERELEVATION

REMOVAL OF PLASTIC MATERIAL ON INTERSTATE FACILITIES, FREEWAYS, DIVIDED ARTERIALS AND MAJOR COLLECTORS HAVING DEPRESSED MEDIANS



TYPICAL CUT SECTION

Note: When this detail is applied to minor collectors and local facilities, the undercut may be reduced to 18".

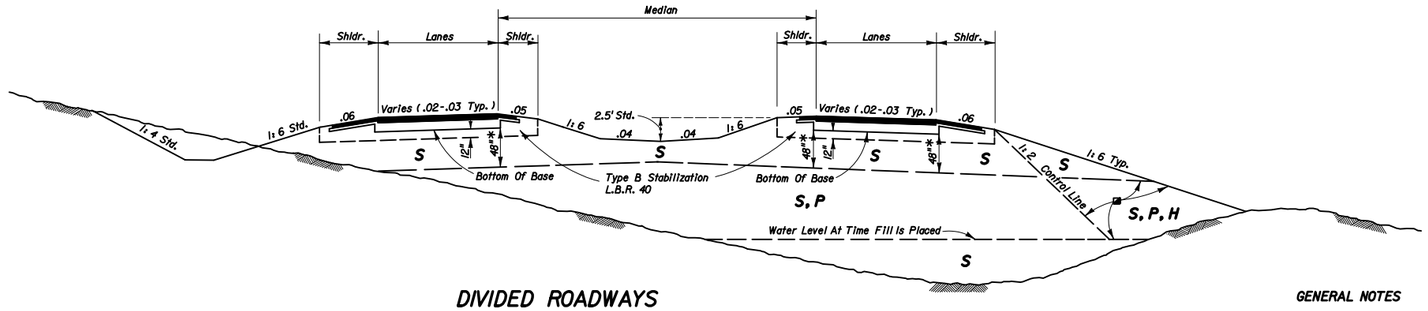
REMOVAL OF PLASTIC MATERIAL ON DIVIDED FREEWAYS, ARTERIALS AND MAJOR COLLECTORS HAVING FLUSH MEDIANS, AND, ON UNDIVIDED ARTERIALS AND MAJOR COLLECTORS

REMOVAL OF PLASTIC MATERIAL

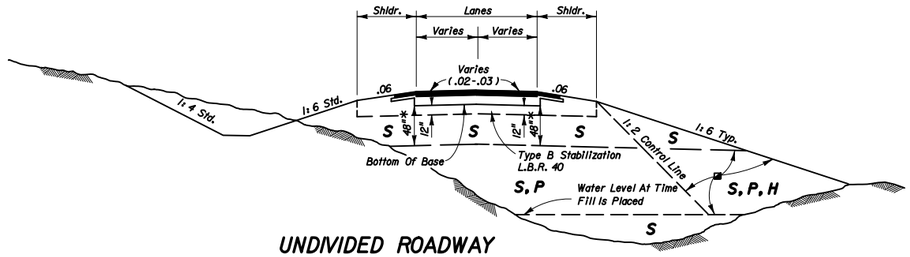
Note: For GENERAL NOTES see Sheet 1.

2006 FDOT Design Standards	Last Revision 00	Sheet No. 2 of 2
REMOVAL OF ORGANIC AND PLASTIC MATERIAL		Index No. 500

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

■ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* For cut sections this dimension may be reduced to 24"; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 18".

FLEXIBLE PAVEMENT

GENERAL NOTES

1. Roadway dimensions are representative. Subgrade dimensions and control lines are standard. The details shown on this index do not supersede the details shown in the plans or on Index Nos. 500 or 506.
2. Plastic (P) soils may be placed above the existing water level (at the time of construction) to within 4 feet of the proposed base. It should be placed uniformly in the lower portion of the embankment for some distance along the project rather than full depth for short distances.
3. High Plastic (H) soils excavated within the project limits may be used in embankment construction as indicated on this index. High Plastic soils are not to be used for embankment construction when obtained from outside the project limits.
4. Select (S) soils having an average organic content of more than two and one-half (2.5) percent, or having an individual test value which exceeds four (4) percent, shall not be used in the subgrade portion of the roadbed.

   Select (S), Plastic (P), or High Plastic (H) soils having an average organic content of more than five (5) percent, or an organic content individual test result which exceeds seven (7) percent, shall not be used in the portion of embankment inside the control line, unless written authorization is provided by the District Geotechnical Engineer; these soils may be used for embankment construction outside the control line, unless restricted by the plans or otherwise specified in the plans, provided they can be compacted sufficiently to sustain a drivable surface for operational vehicles as approved by the Engineer.

   Average organic content shall be determined from the test results from a minimum of three randomly selected samples from each stratum or stockpile of a particular material. Tests shall be performed in accordance with AASHTO T 267 on the portion of a sample passing the No. 4 sieve.
5. Highly organic soils, composed primarily of partially decayed organic matter, often dark brown or black in color with an odor of decay, and sometimes fibrous, shall be designated as muck. Further, any stratum or stockpile of soil which contains pockets of highly organic material may be designated as Muck (M).

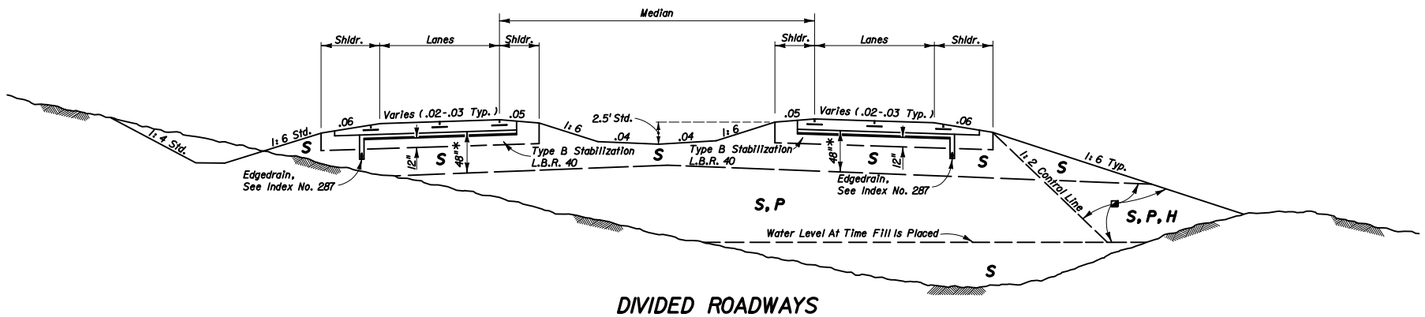
   Highly organic soils shall not be used within the subgrade or embankment portion of the roadbed, with the exception of muck used as a supplement to construct a finish soil layer as described in Section 162 of the FDOT Standard Specifications.

DESIGN NOTES

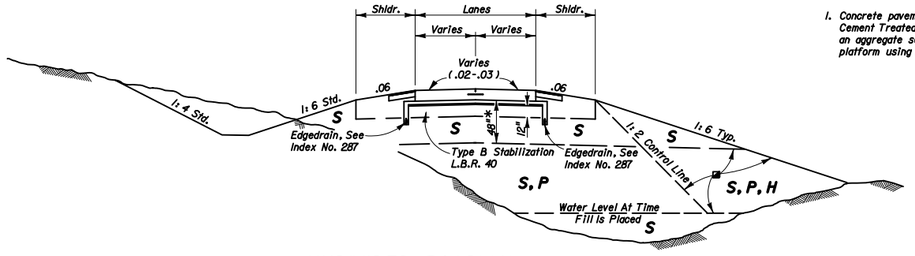
1. The designer shall take into consideration the expectancy of roadway widening to the outside, and where widening is anticipated, specify in the plans the location of the future widening control line for utilization of High Plastic (H) soils and/or soils classified as organic material in the embankment.
2. The designer shall take into consideration the position of the drainage swales in the portion of the embankment where Plastic (P) soils, High Plastic (H) soils, or soils classified as organic material would be allowed. The designer shall limit the use of Plastic (P) soils, High Plastic (H) soils, and/or soils classified as organic material to locations that will not inhibit the infiltration of stormwater from the swales.

	2006 FDOT Design Standards	Last Revision 04	Sheet No. 1 of 3
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	EMBANKMENT UTILIZATION		Index No. 505

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

DESIGN NOTE

1. Concrete pavement is to be placed over 4" of Asphalt Treated Permeable Base (ATPB) or Cement Treated Permeable Base (CTPB) as identified in the plans. This will be placed on an aggregate separator layer using 1" Type SP (Traffic C). This will be placed on a working platform using 12" of Type B Stabilization.

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

■ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. They may be used in the subgrade portion of the roadbed when approved by the District Materials Engineer. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

* For cut sections this dimension may be reduced to 24"; see Index No. 500. For minor collectors and local facilities this dimension may be reduced to 18".

RIGID PAVEMENT - TREATED PERMEABLE BASE OPTION

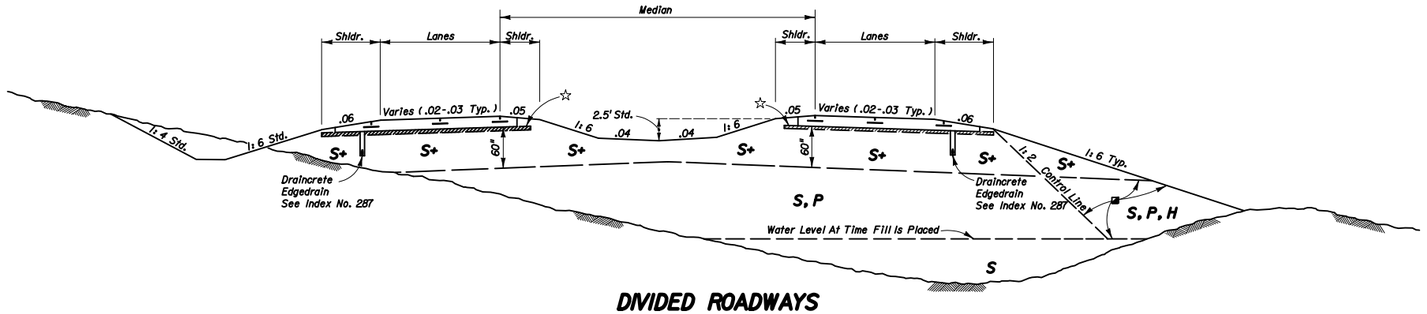
2006 FDOT Design Standards

EMBANKMENT UTILIZATION

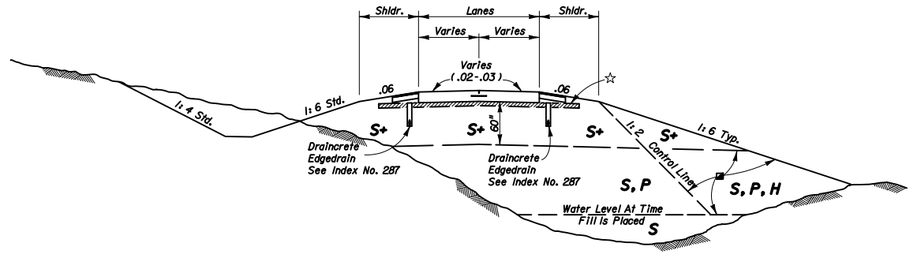
Last Revision	Sheet No.
04	2 of 3

Index No. 505

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



DIVIDED ROADWAYS



UNDIVIDED ROADWAY

SYMBOL	SOIL	CLASSIFICATION (AASHTO M 145)
S	Select	A-1, A-3, A-2-4 **
S+	Special Select	A-3 *** With Minimum Average Lab Permeability of $5x10^{-5}$ cm/sec (0.14 ft./day) as per FM 1-T215
P	Plastic	A-2-5, A-2-6, A-2-7, A-4, A-5, A-6, A-7 (ALL WITH LL< 50)
H	High Plastic	A-2-5, A-2-7, A-5 Or A-7 (ALL WITH LL> 50)
M	Muck	A-8

Classification listed left to right in order of preference.

◪ See General Notes Nos. 4 & 5 for utilization of soils classified as organic material or muck.

*** When allowed by the plans, some types of A-2-4 material may be approved in writing by the District Materials Engineer. This material must meet the minimum lab permeability requirement, be non-plastic, and not exceed 12% passing the No. 200 U.S. Standard sieve.

** Certain types of A-2-4 material are likely to retain excess moisture and may be difficult to dry and compact. They should be used in the embankment above the water level existing at time of construction. A-2-4 material placed below the existing water level must be non-plastic and contain less than 15% passing the No. 200 U.S. Standard sieve.

☆ 3" of #57 or #89 Coarse Aggregate Mixed into Top 6".

Note: SPECIAL SELECT SOIL OPTION may be used only when approved in writing by the District Materials Engineer and shown in the plans.

RIGID PAVEMENT - SPECIAL SELECT SOIL OPTION

	2006 FDOT Design Standards	Last Revision 07/01/05	Sheet No. 3 of 3
STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION	EMBANKMENT UTILIZATION		Index No. 505

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

BASE THICKNESS AND OPTION CODES

Base Group	Structural Range	Base Group Pay Item Number	Base Options							
			Limerock LBR 100	Cemented Coquina LBR 100	Shell Rock LBR 100	Bank Run Shell LBR 100	Graded Aggregate Base LBR 100	Type B-12.5	B-12.5 And 4" Granular Subbase, LBR 100 *	RAP Base
			Structural Number (Per. in.)							
			(.18)	(.18)	(.18)	(.18)	(.15)	(.30)	(.30&.15)	(NA)
1	.65-.75	701	4"	4"	4"	4"	4½"	△ 4"		□ 5"
2	.80-.90	702	5"	5"	5"	5"	5½"	△ 4"		
3	.95-1.05	703	5½"	5½"	5½"	5½"	6½"	△ 4"		
4	1.05-1.15	704	6"	6"	6"	6"	7½"	△ 4"		
5	1.25-1.35	705	7"	7"	7"	7"	8½"	4½"		
6	1.35-1.50	706	8"	8"	8"	8"	9"	5"		
7	1.50-1.65	707	8½"	8½"	8½"	8½"	10"	5½"		
8	1.65-1.75	708	9½"	9½"	9½"	9½"	11"	5½"		
9	1.75-1.85	709	10"	10"	10"	10"	12"	6"	4"	
10	1.90-2.00	710	11"	11"	11"	11"	Ø 13"	6½"	4½"	
11	2.05-2.15	711	12"	12"	12"	12"	Ø 14"	7"	5"	
12	2.20-2.30	712	12½"	12½"	12½"	12½"		7½"	5½"	
13	2.35-2.45	713	Ø 13½"	Ø 13½"	Ø 13½"	Ø 13½"		8"	6"	
14	2.45-2.55	714	Ø 14"	Ø 14"	Ø 14"	Ø 14"		8½"	6½"	
15	2.60-2.70	715						9"	7"	

GENERAL NOTES

1. On new construction and complete reconstruction projects where an entirely new base is to be built, the design engineer may specify just the Base Group and any of the unrestricted General Use Optional Bases shown in that base group may be used. Note, however, that some thick granular bases are limited to widening which prevents their general use.
2. Where base options are specified in the plans, only those options may be bid and used.
3. The designer may require the use of a single base option, for instance Type B-12.5 in a high water condition. This will still be bid as Optional Base.

* For granular subbase, the construction of both the subbase and Type B-12.5 will be paid for under the contract unit price for Optional Base. Granular subbases include Limerock, Cemented Coquina, Shell Rock, Bank Run Shell and Graded Aggregate Base at LBR 100. The base thickness shown is Type B-12.5. All subbase thicknesses are 4".

Ø To be used for widening only, three feet or less.

△ Based on minimum practical thicknesses.

□ Restricted to non-limited access shoulder base construction.

GENERAL USE OPTIONAL BASE GROUPS AND STRUCTURAL NUMBERS

	2006 FDOT Design Standards	Last Revision 00	Sheet No. 1 of 2
	OPTIONAL BASE GROUP AND STRUCTURAL NUMBERS		Index No. 514

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

BASE THICKNESS AND OPTION CODES

Base Group	Structural Range	Base Group Pay Item Number	Base Options						
			Limerock Stabilized LBR 70	Shell LBR 70	Shell Stabilized LBR 70	Sand-Clay LBR 75	Soil Cement (300 psi) (Plant Mixed)	Soil Cement (300 psi) (Road Mixed)	Soil Cement (500 psi) (Plant Mixed)
			Structural Number (Per. in.)						
			(.12)	(.12)	(.10)	(.12)	(.15)	(.15)	(.20)
1	.60-.75	701	5"	5"	7"	5"	5"	5"	4"*
2	.75-.90	702	6½"	6½"	8½"	6½"	5½"	5½"	4"
3	.95-1.05	703	8"	8"	9½"	8"	6½"	6½"	5"
4	1.05-1.15	704	9"	9"	10½"	9"	7½"	7½"	5½"
5	1.20-1.35	705	10"	10"	12"	10"	8½"	8½"	6"
6	1.30-1.45	706	11"	11"		11"	9"		7"
7	1.45-1.60	707	12½"	12½"		12½"	10"		7½"
8	1.65-1.75	708					11"		8½"

Not Recommended For 20 Year Design Accumulated 18 kip Equivalent Single Axle (ESAL) Loads Greater Than 1,000,000

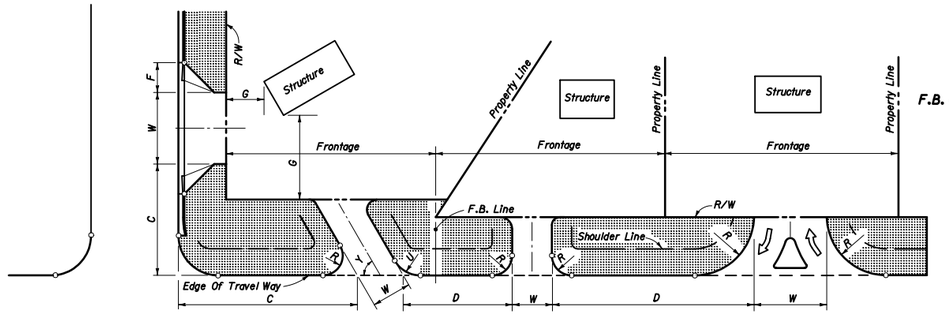
Note:
These base materials may be used on FDOT projects when approved in writing by the District Materials Engineer and shown in the plans.

* Based On Minimum Practical Thickness

LIMITED USE OPTIONAL BASE GROUPS AND STRUCTURAL NUMBERS

2006 FDOT Design Standards	Last Revision	Sheet No.
OPTIONAL BASE GROUP AND STRUCTURAL NUMBERS	00	2 of 2
	Index No. 514	

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



LEGEND

- Return Radius Point Or Flare Point
- Buffer Areas
- **F.B. Line** Frontage Boundary Line
- **W** Driveway Width
- **Y** Driveway Angle
- **C** Corner Clearance
- **G** Setback
- **R** Outside Radius
- **U** Inside Radius
- **D** Distance Between Connections
- **F** Flare

For Additional Information Refer To FDOT Rules Chapters 14-96 And 14-97.

SKETCH ILLUSTRATING DEFINITIONS

ELEMENT DESCRIPTION	URBAN (CURB & GUTTER)			RURAL		
	1-20 Trips/Day or 1-5 Trips/Hour	21-600 Trips/Day or 6-60 Trips/Hour	601-4000 Trips/Day ■ or 61-400 Trips/Hour	1-20 Trips/Day or 1-5 Trips/Hour	21-600 Trips/Day or 6-60 Trips/Hour	601-4000 Trips/Day ■ or 61-400 Trips/Hour
		2-Way □	2-Way □		2-Way □	2-Way □
CONNECTION WIDTH W	12' Min. 24' Max.	24' Min. 36' Max. ☆	24' Min. 36' Max. ☆	12' Min. 24' Max.	24' Min. 36' Max. ☆	24' Min. 36' Max. ☆
FLARE (Drop Curb) F	10' Min.	10' Min.	N/A	N/A	N/A	N/A
RETURNS (Radius) R & U	N/A	△	25' Min. 50' Std. 75' Max.	15' Min. 25' Std. 50' Max.	25' Min. 50' Std. 75' Max.	25' Min. 50' Std. (Or 3-Centered Curves)
ANGLE OF DRIVE Y		60°-90°	60°-90°		60°-90°	60°-90°
DIVISIONAL ISLAND (Throat Median)		4'-22' Wide	4'-22' Wide		4'-22' Wide	4'-22' Wide
SETBACK G	12' Min., All categories. See General Note No. 5.					

■ Street or road intersection design, with possible auxiliary lanes and channelization, may be necessary. Intersection design, with possible auxiliary lanes and channelization, should be considered for connections with more than 4000 trips/days.

□ "2-Way" refers to one "in" movement and one "out" movement i.e. not exclusive left or right turn lanes on the connection.

☆ When more than 2 lanes in the turnout connection are required, the 36' max. width may be increased to relieve interference between entering and exiting traffic which adversely affects traffic flow. These cases require documented site specific study and design.

△ Small radii may be used in lieu of flares as approved by the Department.

DESIGN NOTE: 1-Way connections will be designed to effectively eliminate unpermitted movements.

GENERAL NOTES

1. For definitions and descriptions of access connection "Categories" and access "Classifications" of highway segments, and for other detailed information on access to the State Highway System, refer to FDOT Rule Chapter 14-96, "State Highway Connection Permits Administrative Process" and Rule Chapter 14-97, "State Highway System Access Management Classification System And Standards."

2. For this index the term 'turnout' applies to that portion of driveways, roads or streets adjoining the outer roadway. For this index the term 'connection' encompasses a driveway, street or road and their appurtenant islands, separators, transition tapers, auxiliary lanes, travelway flares, drainage pipes and structures, crossovers, sidewalks, curb cut ramps, signing, pavement marking, required signalization, maintenance of traffic or other means of access to or from controlled access facilities. The turnout requirements set forth in this index do not provide complete intersection design, construction or maintenance requirements.

3. The location, positioning, orientation, spacing and number of connections and median openings shall be in conformance with FDOT Rule Chapter 14-97.

4. On Department construction projects all driveways not shown on the plans are to be reconstructed at their existing location in conformance to these standards, or, in conformance to permits issued during the construction project.

5. Driveways shall have sufficient length and size for all vehicular queueing, stacking, maneuvering, standing and parking to be carried out completely beyond the right of way line. Except for vehicles stopping to enter the highway, the turnout areas and drives within the right of way shall be used only for moving vehicles entering or leaving the highway.

6. Connections with expected daily traffic over 4000 vpd are to be constructed as intersecting streets or roads. The design requirement of this index and that of the local government will be used to select appropriate connection widths, radii and intersection design, subject to the approval of the Department.

   For connections with expected daily traffic less than 4000 vpd, the Department will determine if drop curbs or radius returns are required in accordance with existing or planned connections. Where radius returns apply, the design requirements of this index and that of the local government will be used to select appropriate connection widths, radii and intersection design, subject to the approval of the Department.

   For connections that are intended to daily accommodate either multi-unit vehicles or single unit vehicles exceeding 30' in length, returns with 50' radii are to be used, unless otherwise called for in the plans or otherwise stipulated by permit. Where large numbers of multi-unit vehicles will use the connection, the connection width and radii are to be increased and auxiliary lanes, tapers, lane flares, separators and/or islands constructed, as determined by the Department to be necessary for safe turning movements.

7. Any connection on a highway having a posted or operating speed over 45 mph shall have radial returns. Any connection requiring or having a specified median opening with left turn storage and served directly by that opening shall have radial returns.

8. Where a connection is intended to align with a connection across the highway, the through lanes are to align directly with the corresponding through lanes.

9. For new connections and for connections on all new construction and reconstruction projects, pavement materials and thicknesses shall meet the requirements applicable to either that detailed for "Urban Flared Turnouts", or, that described in "Table 515-1" for connections with radial returns and/or auxiliary lanes.

10. The responsibility for the cost of construction or alteration to an access connection shall be in accordance with FDOT Rule Chapter 14-96.

DESIGN NOTES

1. Prior to the adoption of FDOT Rules Chapters 14-96 and 14-97, connections to the State Highway System were defined and permitted by Classes. Connections have been redfined by Categories under Rule 14-96; and, the term "Class" has been applied to highway segments of the State Highway System as defined under Rule 14-97.

NOT INTENDED FOR FULL INTERSECTION DESIGN

SUMMARY OF GEOMETRIC REQUIREMENTS FOR TURNOUTS

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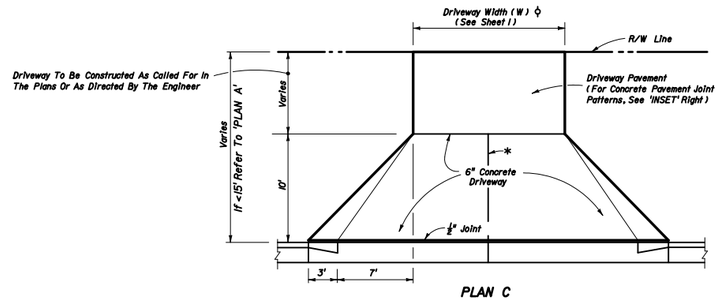
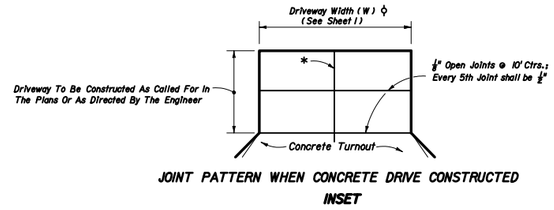
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	"GENERAL NOTES", Note 7, delete the first sentence.



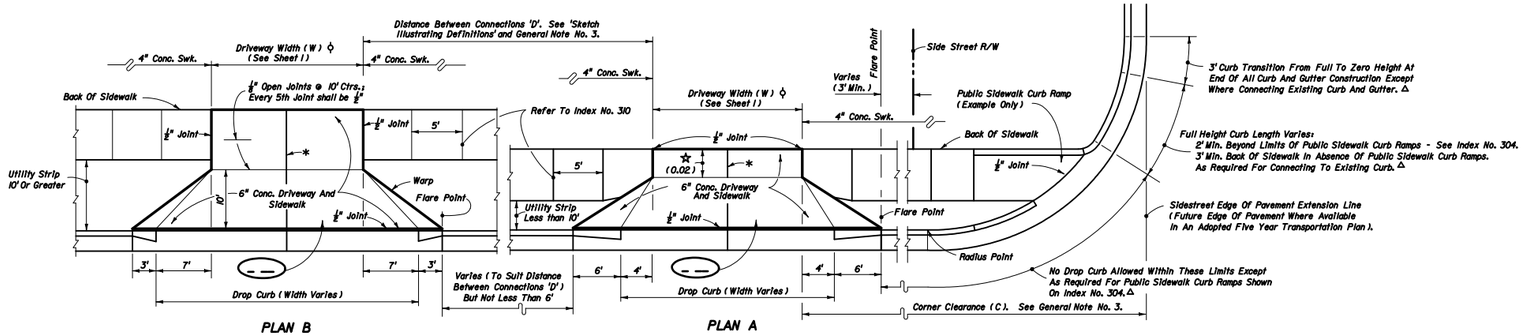
PLAN C

TURNOUT WITHOUT SIDEWALK



JOINT PATTERN WHEN CONCRETE DRIVE CONSTRUCTED

INSET



PLAN B

TURNOUT WITH SIDEWALK AND UTILITY STRIP (10' OR GREATER)

PLAN A

TURNOUT WITH SIDEWALK AND UTILITY STRIP (LESS THAN 10')

Footnotes:

All ½" Joints shall be constructed with preformed joint filler.

* ¼" Open Joints placed at equal (20' max.) intervals for driveways over 20' wide. Joints in curb and gutter to match joints in driveways.

△ When connecting to sidestreet curb and gutter sections, the no drop curb limits should extend back to the sidestreet radius point. With or without curb and gutter, no driveway should encroach on the corner radius.

℄ Driveways (6" concrete) shall be of a uniform width (W) to the right of way line.

☆ 4' Min., May be reduced to 3' Min. in restricted conditions when approved by the Engineer.

(- -) Alpha-numeric identification of a flared driveway type specifically called for in the plans, see sheets 3 and 4.

SPECIAL NOTES FOR URBAN FLARED TURNOUTS

1. Driveway 6" concrete pavement and drop curb shall meet the material and construction requirements of Sections 522 and 520 respectively of the FDOT Standard Specifications. The driveway foundation shall meet the requirement of Subarticle 522-4.
2. For details of drop curb and public sidewalk curb ramps refer to indexes Nos. 300 and 304 respectively.
3. Where turnouts are constructed within existing curb and gutter, the existing curb and gutter shall be removed either to the nearest joint beyond the flare point or to the extent that no remaining section is less than 5' long; and, drop curb constructed in accordance with Notes Nos. 1 and 2.
4. Cost for preformed joint filler shall be included in the cost for the concrete pavement (concrete sidewalk, 6" thick).
5. For turnouts with radial returns see the requirements under the "Summary Of Geometric Requirements For Turnouts", the "General Notes", the details of "Rural Turnout Construction" and the detail of "Limits Of Clearing & Grubbing, Stabilization And Base At Intersections".
6. Department maintenance of pavement shall extend out to the right of way or 2' back of sidewalk, whichever distance is less.
7. The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
8. All pavement markings on the State highways, including acceleration and deceleration lane markings, and signing installed for the operation of the State highway shall be maintained by the Department.
9. All signing and marking installed for the operation of the connection (such as stop bars and stop signs for the connection) shall be the responsibility of the permittee.
10. Turnouts will be paid for under the contract unit price for Concrete Sidewalk (6" Thick), SY.
11. All sidewalk surfaces crossing driveways with a cross slope shown in this Index to be 0.02 shall be 0.02 Maximum.

DESIGN NOTES FOR URBAN FLARED TURNOUTS

1. Driveways indicated as 'Adverse Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions; or, those with slopes that can cause drivers who are leaving the roadway to slow or pause to the extent that traffic demand volumes will be impeded.

   Driveways indicated as 'Marginal Applications' are those with slopes that can cause overhang drag for representative standard passenger vehicles under fully loaded conditions when the driveway is located on the low side of fully superelevated roadways.

   Driveways indicated as 'General Applications' are those with slopes that can readily accommodate representative standard passenger vehicles and those that can accommodate representative standard trucks, vans, buses and recreational vehicles operating under normal crown and superelevation conditions.
2. The standard flared driveways on this Index may not accommodate vehicles with low beds, low undercarriage or low appendage features. Where such vehicles are design vehicles driveways are to have site specific flare designs or Catagory III designs.
3. When specific flare type driveways are to be constructed, the type shall be designated in the plans using the assigned alpha-numeric designation.

Note: See sheet 1 for 'GENERAL NOTES'

URBAN FLARED TURNOUTS

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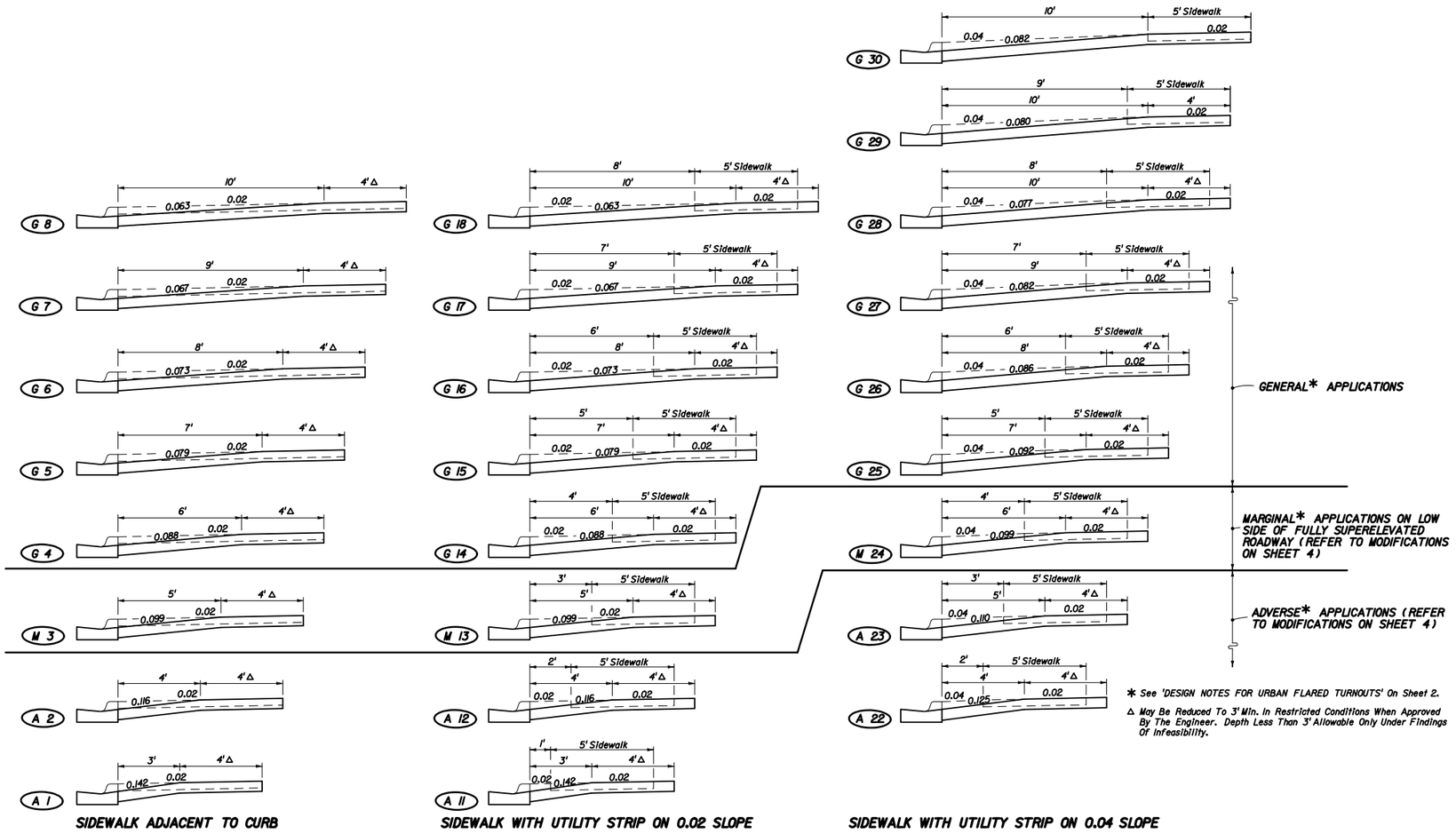

* See 'DESIGN NOTES FOR URBAN FLARED TURNOUTS' On Sheet 2.

Δ May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer. Depth Less Than 3' Allowable Only Under Findings Of Infeasibility.

DRIVEWAY SECTIONS ON CURBED FACILITIES WITH SIDEWALKS

2006 FDOT Design Standards

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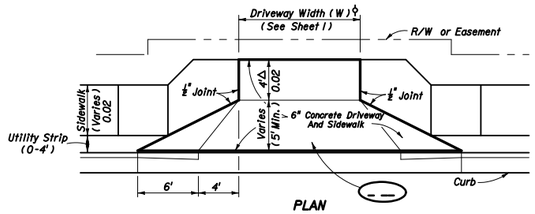
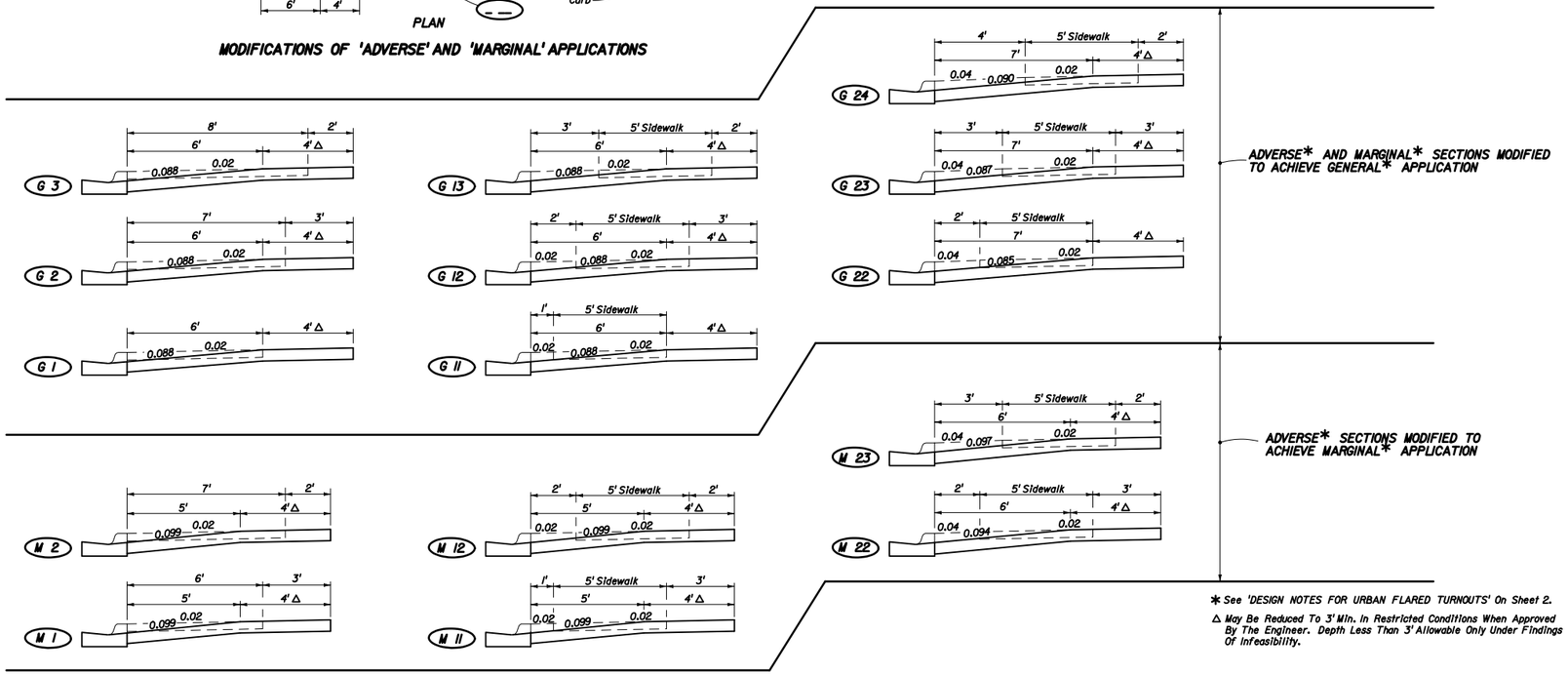


PLAN

MODIFICATIONS OF 'ADVERSE' AND 'MARGINAL' APPLICATIONS



SIDEWALK ADJACENT TO CURB

SIDEWALK WITH UTILITY STRIP ON 0.02 SLOPE

SIDEWALK WITH UTILITY STRIP ON 0.04 SLOPE

* See 'DESIGN NOTES FOR URBAN FLARED TURNOUTS' On Sheet 2.

Δ May Be Reduced To 3' Min. In Restricted Conditions When Approved By The Engineer. Depth Less Than 3' Allowable Only Under Findings Of Infeasibility.

MODIFICATIONS TO ADVERSE AND MARGINAL SECTIONS

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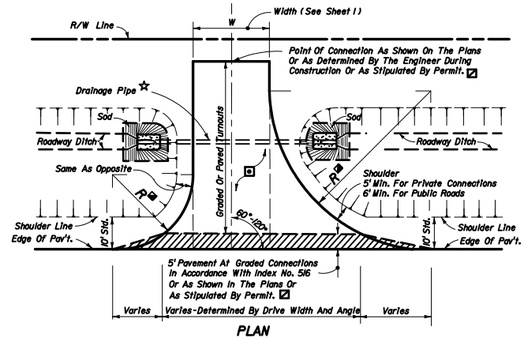
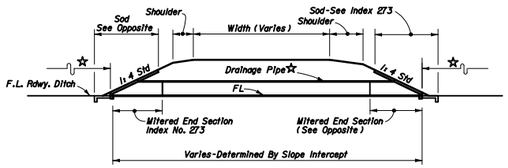
Typical Half Section For Low Volume/Residential Connections

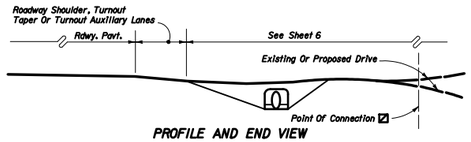
Typical Half Section For Higher Volume Connections



PLAN



LONGITUDINAL SECTION



PROFILE AND END VIEW

☆ Drainage pipe size and length shall be that shown on the plans, or as stipulated by permit, or, as determined by the Engineer during construction. The size shall be at least that established by the FDOT District, but not less than 15" diameter or equivalent. For minimum cover over drainage pipe see Index No. 205. Pipe arch or elliptical pipe may be required to obtain necessary cover. At minimal cover applications a modified pavement apron is permitted. See 'PERMISSIBLE PAVEMENT MODIFICATION' Index No. 273. For spacing between adjacent pipe end treatments see Index No. 273.

◉ Stable material may be required for graded turnouts to private property as directed by the Engineer in accordance with Section 102-6 of the Standard Specifications.

◪ The 5' pavement at graded connections is not required where there is paved shoulder 4' or more in width. The 5' pavement requirement may be waived for connections serving one or two homes or field entrances with less than 20 trips per day, or 5 trips per hour as approved by permit or by the Engineer, or when not itemized in the plans.

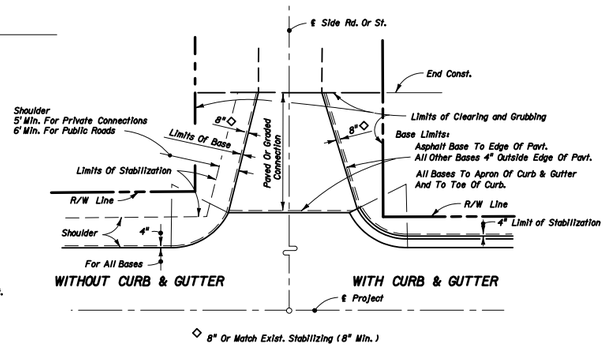
Paved turnouts are to be constructed for all paved connecting facilities. The connecting point will be determined by the Engineer.

Paved turnouts are to be constructed for all business, commercial, industrial or high volume residential graded connecting facilities. The connecting point shall be 30' from edge of roadway pavement or at R/W line, whichever is less.

Paved turnouts are to be constructed for all connecting facilities over 4000 vehicles per day. The connecting point shall be at the R/W line.

◪ See "Summary Of Geometric Requirements For Turnouts" chart for return radii lengths and supplemental information.

RURAL TURNOUT CONSTRUCTION



◇ 8" Or Match Exist. Stabilizing (8" Min.)

LIMITS OF CLEARING & GRUBBING, STABILIZING AND BASE AT INTERSECTIONS

MATERIAL TYPES AND THICKNESSES IN DRIVING AREAS FOR RURAL AND URBAN CONNECTIONS

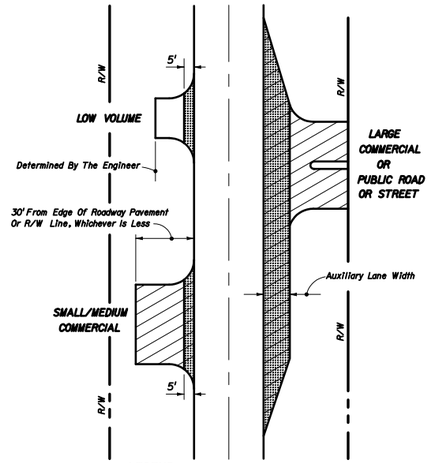
Course	Materials (2)	Thickness (In.) (1)	
		Connections (3)	Roadway (4)
Structural	Asphaltic Concrete	1"	1½"
Bases	Optional Base (See Index No. 514)	O.B.G. 1	O.B.G. 3

(1) Minimum thickness.
(2) All materials shall be approved by the Department prior to being placed.
(3) Connection structure other than traffic lanes. See Notes 1 and 2 below.
(4) Travel way flares (bypass lanes), auxiliary lanes serving more than a single connection, and all median crossovers including their auxiliary lanes and/or transition tapers. See Notes 1 and 2 below.

NOTES

1. The pavement should be structurally adequate to meet the expected traffic loads and should not be less than that shown above, except as approved by the Department for graded connections. Other Department approved pavement equivalences may be used at the discretion of the Engineer. For additional information see Index No. 514.
2. Auxiliary lanes and their transition tapers shall be the same structure as the abutting roadway pavement or any of the roadway structures tabulated above, whichever is thicker.
3. If an asphalt base course is used for a turnout, its thickness may be increased to match the edge of roadway pavement in lieu of a separate structural course. 6" of Portland cement concrete will be acceptable in lieu of the asphalt base and structural courses. See Notes 4 and 5 below.
4. A structural course is required for flexible pavements when they are used for auxiliary lanes serving more than a single connection.
5. Connections paved with Portland cement concrete shall be Class I concrete at least 6" thick. The Department may require greater thickness when called for in the plans or stipulated by permit. Materials and construction are to conform with FDOT Standard Specifications Sections 346, 350 and 522.
6. The Department may require other pavement criteria where local conditions warrant.

PAVEMENT STRUCTURE FOR TURNOUTS AND AUXILIARY LANES TABLE 515-1



NOTES

1. Auxiliary lane pavements and crossover pavements shall be maintained by the Department.
2. Department maintenance of turnout pavement shall extend out to 5' from edge of the travel way or limits of paved shoulders, and, extend to include auxiliary lanes. The remainder of any turnout paved area on the right of way shall be maintained by the owner or his authorized agent. As a function of routinely reworking shoulders, the Department may grade and shape existing material on non-paved areas beyond the maintained pavement.
3. Control and maintenance of drainage facilities within the right of way shall be solely the responsibility of the Department, unless specified differently by Department permit.
4. The maintenance and operation of highway lighting, traffic signals, associated equipment, and other necessary devices shall be the responsibility of a public agency.
5. All pavement markings on the State highways, including acceleration and deceleration lane markings, and signing installed for the operation of the State highway shall be maintained by the Department.
6. All signing and marking installed for the operation of the connection (such as stop bars and stop signs for the connection) shall be the responsibility of the permittee.

LIMITS OF CONSTRUCTION AND MAINTENANCE FOR RURAL CONNECTIONS

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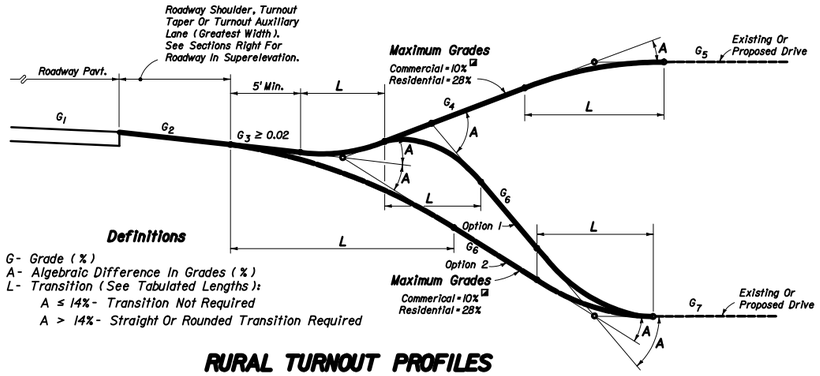
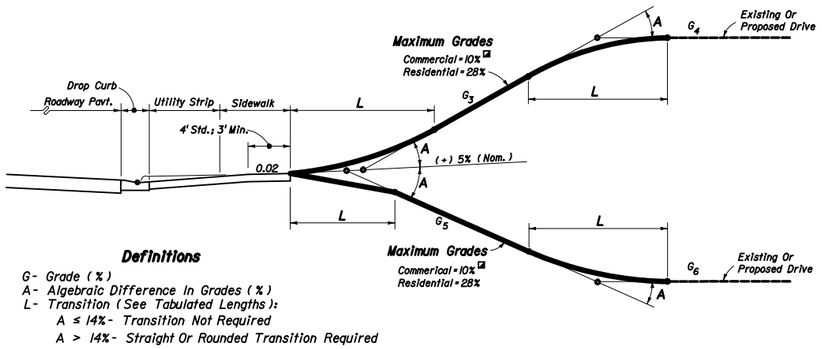


RURAL TURNOUT PROFILES



URBAN TURNOUT PROFILES

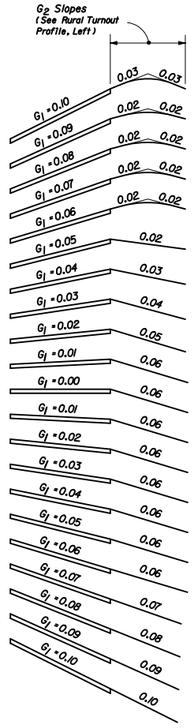
- When restoring or reconstructing existing commercial turnout connections on new construction and reconstruction projects, the maximum 10% commercial grade may be exceeded provided this does not create any adverse roadway operational or safety impacts. This shall be approved by the District Design Engineer and be supported by documented site specific findings.

LENGTHS (L) (FT.)

A	CRESTS				SAGS			
	STRAIGHT		ROUNDED		STRAIGHT		ROUNDED	
	Desirable	Minimum	Desirable	Minimum	Desirable	Minimum	Desirable	Minimum
6-13%	3	0	5	0	3	0	5	0
14%	3	0	10	0	3	0	10	0
15%	3	2.5	10	3	5	3	10	5
16%	5	3	10	4	6	4	10	6
17%	6	3.5	10	5	8	5	10	7
18%	6	4	10	6	9	6	10	8
19%	7	4.5	10	7	11	7	12	9
20%	8	5	11	8	12	8	13	10
21%	9	5.5	12	9	13	8.5	14	11
22%	10	6	13	10	14	9	16	12
23%	10	6.5	14	10.5	14	9.5	16	12.5
24%	11	7	15	11	15	10	17	13
25%	12	7.5	15	11.5	16	10.5	18	13.5
26%	12	8	16	12	17	11	18	14
27%	13	8.5	17	12.5	17	11.5	19	14.5
28%	14	9	17	13	18	12	20	15
29%	NA	NA	22	14	NA	NA	21	17
30-31%	NA	NA	23	15	NA	NA	22	18
32-33%	NA	NA	24	16	NA	NA	23	20
34-36%	NA	NA	26	17	NA	NA	25	21
37-38%	NA	NA	27	18	NA	NA	26	22
39-41%	NA	NA	29	19	NA	NA	28	24
42-43%	NA	NA	30	20	NA	NA	29	25
44-46%	NA	NA	32	21	NA	NA	31	26
47-48%	NA	NA	33	22	NA	NA	32	27
49-51%	NA	NA	34	23	NA	NA	34	28
52-54%	NA	NA	36	24	NA	NA	35	30
55-56%	NA	NA	37	25	NA	NA	36	31

Rounded: Either circular, parabolic or spline curvature. The plans or the Engineer may specify a particular type of curvature.
Desirable: Desirable minimum lengths. } Greater lengths than minimum and desirable are recommended where practical for flatter and smoother profile.
Minimum: Absolute minimum lengths.

RECOMMENDED TURNOUT PROFILE TRANSITION LENGTHS (L) (FT)



ROADWAY PAVEMENT SLOPES AND SLOPES OF ABUTTING RURAL TURNOUT SURFACES (G_2)

SUPERELEVATION SECTIONS

STORMWATER RUNOFF AND PROFILE OPTION NOTES

1. Turnouts shall neither cause water to flow on or across the roadway pavement, nor cause water ponding or erosion within the State right of way. On all rural turnouts the transition (L) nearest the roadway shall be sloped or crowned to direct stormwater runoff to the roadside ditch. Inlets, flumes or other appropriate runoff control devices shall be constructed when runoff volumes are sufficient to cause erosion of the shoulder. Similar runoff control devices shall be constructed as necessary to properly direct and control the stormwater runoff on urban turnouts.

2. The Option 1 profile is intended for locations where roadway, turnout taper and auxiliary lane stormwater runoff volumes are relatively large. The Option 2 profile is intended for locations where runoff volumes are relatively small and/or where there is no roadside ditch.

TURNOUT PROFILES

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GENERAL NOTES

1. Details apply to both rural and urban intersections under stop sign control or flashing beacon control. For full signal controlled intersections see Design Note No 4.

2. Sight distance (d) applies to normal and skewed intersections (intersecting angles between 60° and 120°), and where vertical and/or horizontal curves are present. Sight distance (d) is measured along the major roadway from the center of the entrance lane of the minor roadway to the center of the near approach lane (right or left) of the major roadway. Distances d_L and d_r are measured from the centerline of the entrance lane of the minor roadway to a point on the edge of the near side outer traffic lane on the major roadway. Distance d_m is measured from the centerline of the entrance lane of the minor roadway to a point on the median clear zone limit or horizontal clearance limit for the far side roadway of the major roadway.

3. a. The limits of clear sight define a corridor throughout which a clear sight window must be preserved. See WINDOW DETAIL, Sheet 6.

   b. Clear sight must be provided between vehicles at intersection stop locations, and vehicles on the major roadway within dimension 'd'.

   c. Since observations are made in both directions along the line of sight, the reference datum between roadways is 3'-6" above respective pavements.

4. Barrier systems within intersection sight corridors, where penetration into the sight window might occur, shall be located to provide the least adverse affect practical.

5. The corridor defined by the limits of clear sight is a restricted planting area. Drivers of vehicles on the intersecting roadway and vehicles on the major roadway must be able to see each other clearly throughout the limits of 'd' and 'd_a'. If in the Engineers judgement, landscaping interferes with the line of sight corridor prescribed by these standards the Engineer may rearrange, relocate or eliminate plantings. Plants within the restricted areas are limited to selections as follows:

   Ground Cover & Trunked Plants (Separate or Combined):

   Ground Covers - Plant selection of low growing vegetation which at maturity does not attain a height greater than 18" below the sight line datum. For ground cover in combination with trees and palms; the following heights below the sight line datum will apply: 24" for trees and palms ≤ 11" dia.; and, 18" for sabal palms > 11" ≤ 18" dia. (dia. -within Sight Window).

   Trunked Plants - Plant selection of a mature trunk diameter 4" or less measured at 6" above the ground. Canopy or high borne foliage shall never be lower than 5' above the sight line datum. These selections shall be spaced no closer than 20'.

   Trees:

   Trees can be used with lawn; pavers; pavement; gravel, bark or wood chip beds; ground covers or other Department approved material. The clear sight window must be in conformance with the 'WINDOW DETAIL' modified to attain the height requirements listed in 'Ground Covers' above. Tree size and spacing shall conform to the following tabular values:

Description	Speed (mph)													
	30		35		40		45		50		55		60	
	(Inches)													
Diameter (Within Limits Of Sight Window)	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18	>4≤11	>11≤18
	(Feet)													
Minimum Spacing (c. to c. Of Trunk)	22	91	27	108	33	126	40	146	45	165	52	173	60	193

Sizes and spacings are based on the following conditions:
(a) A single line of trees in the median parallel to but not necessarily colinear with the centerline,
(b) A straight approaching mainline, within skew limits as described in No. 2 above.
(c) 1. Trees and palms ≤ 11" in diameter casting a vertical 6' wide shadow band on a vehicle entering at stop bar location when viewed by mainline driver beginning at distance 'd'; see SHADOW DIAGRAM, Sheet 6.
2. Sabal palms with diameters > 11" to ≤ 18" spaced at intervals providing a 2 second full view of entering vehicle at stop bar location when viewed by mainline driver beginning at distance 'd'; see PERCEPTION DIAGRAM, Sheet 6.
(d) Trees with diameters ≤ 11" intermixed with trees with diameters > 11" ≤ 18" are to be spaced based on trees with diameters > 11" ≤ 18".

For any other conditions the tree sizes, spacings and locations shall be detailed in the plans; see Design Note No. 5.

DESIGN NOTES

1. The information shown on this index is intended solely for the purpose of clear sight development and maintenance at intersecting highways, roads and streets, and is not intended to be used to establish roadway and roadside safety except as related to clear sight corridors. An analysis of sight distance shall be documented for all intersections.

2. Details are based on the AASHTO 'A Policy On Geometric Design Of Highways And Streets, 2001', CHAPTER 9, INTERSECTION SIGHT DISTANCE, CASES B and F, and Department practices for channelized median openings (left turns from major roadways).

3. The minimum driver eye setback of 14.5' from the edge of the traveled way may be adjusted on any intersection leg only when justified by a documented, site specific field study of vehicle stopping position and driver eye position.

4. For SIGNALIZED INTERSECTIONS sight distances should be developed based on AASHTO 'Case D- Intersections With Traffic Signal Control'. 'At signalized intersections, the first vehicle stopped on one approach should be visible to the driver of the first vehicle stopped on each of the other approaches. Left-turning vehicles should have sufficient sight distance to select gaps in oncoming traffic and complete left turns. Apart from these sight conditions, there are generally no other approach or departure sight triangles needed for signalized intersections.
However, if the traffic signal is to be placed on two-way flashing operation (i.e. flashing yellow on the major-road approaches and flashing red on the minor-road approaches) under off-peak or nighttime conditions, then the appropriate departure sight triangles for Case B, both to the left and to the right, should be provided for the minor-road approaches. In addition, if right turns on a red signal are to be permitted from any approach, then the appropriate departure sight triangle to the left for Case B2 should be provided to accommodate right turns from that approach.'

5. Where curvature, superelevation, adverse split profiles or other conditions preclude the use of standard tree sizes and spacing, proof of view and shadowing restraints must be documented and the size and location of trees in medians detailed in the plans.

6. Intersection sight distance values are provided for Passenger Vehicles, SU Vehicles and Combination Vehicles. Intersection sight distance based on the Passenger Vehicle is suitable for most intersections. Where substantial volumes of heavy vehicles enter the major-road, such as from ramp terminals with stop control or roadways serving truck terminals, the use of tabulated values for SU Vehicles or Combination Vehicles should be considered.

2006 FDOT Design Standards	Last Revision	Sheet No.
SIGHT DISTANCE AT INTERSECTIONS	07/01/05	1 of 6
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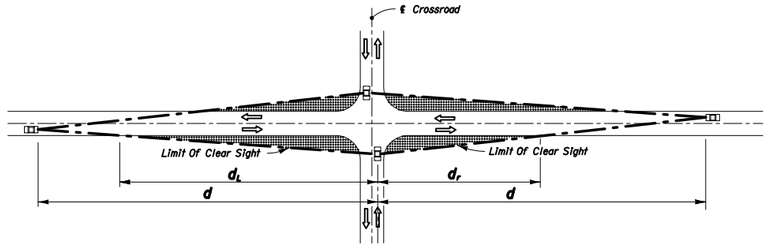
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



PICTORIAL

2 LANE UNDIVIDED

Design Speed	d	d_L	d_r
30	335	240	150
35	390	275	175
40	445	315	200
45	500	350	225
50	555	390	250
55	610	430	275
60	665	470	300
65	720	510	325

Passenger Vehicle

Design Speed	d	d_L	d_r
30	420	295	190
35	490	345	220
40	560	395	250
45	630	445	280
50	700	495	310
55	770	545	345
60	840	595	375
65	910	645	405

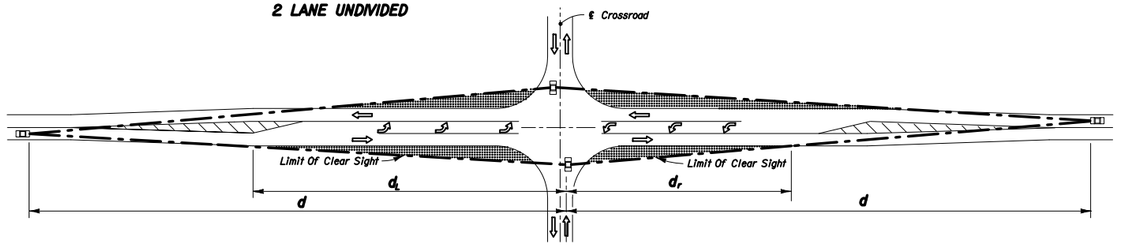
SU Vehicle

Design Speed	d	d_L	d_r
30	510	360	225
35	595	420	265
40	680	480	305
45	765	540	340
50	845	600	375
55	930	660	415
60	1015	720	450
65	1100	780	490

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_r) (FEET)

2 LANE UNDIVIDED



PICTORIAL

2 LANE 2 WAY • FLARED FOR OPPOSING LEFT TURN CENTERED ON ALIGNMENT

Design Speed	d	d_L	d_r
30	355	195	135
35	415	225	155
40	475	260	180
45	530	290	200
50	590	325	220
55	650	355	245
60	710	390	265
65	765	420	290

Passenger Vehicle

Design Speed	d	d_L	d_r
30	450	250	170
35	525	290	200
40	600	330	225
45	675	370	255
50	750	410	285
55	825	450	310
60	900	490	340
65	975	530	370

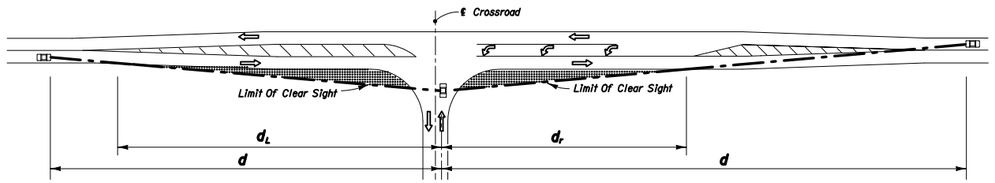
SU Vehicle

Design Speed	d	d_L	d_r
30	540	295	205
35	630	345	240
40	720	395	270
45	810	445	305
50	900	495	340
55	990	540	375
60	1080	590	405
65	1170	640	440

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_r) (FEET)

2 LANE 2 WAY • FLARED FOR LEFT TURNS



PICTORIAL

2 LANE 2 WAY • FLARED FOR SINGLE SIDE LEFT TURN CENTERED ON ALIGNMENT

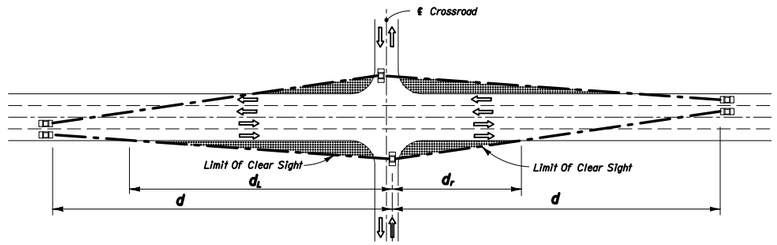
LEGEND

Areas Free Of Sight Obstructions

NOTE: See Sheet 6 for intersecting roadway origin of clear sight and quadrant corner clips.

2006 FDOT Design Standards	Last Revision 04	Sheet No. 2 of 6
SIGHT DISTANCE AT INTERSECTIONS	Index No. 546	

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



PICTORIAL
4 LANE UNDIVIDED

Design Speed	d	d_L	d_r
30	355	250	115
35	415	295	135
40	475	335	155
45	530	375	175
50	590	415	195
55	650	460	210
60	705	500	230
65	765	540	250

Passenger Vehicle

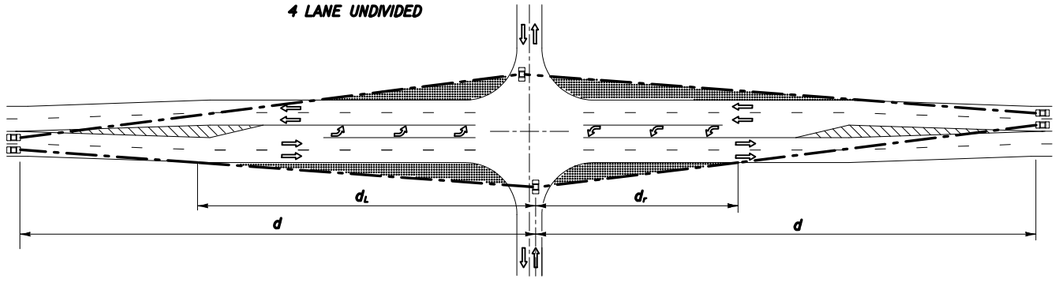
Design Speed	d	d_L	d_r
30	450	320	150
35	525	370	170
40	600	425	195
45	675	475	220
50	750	530	245
55	825	585	270
60	900	635	295
65	975	690	320

SU Vehicle

Design Speed	d	d_L	d_r
30	540	380	175
35	630	445	205
40	720	510	235
45	810	570	265
50	900	635	295
55	990	700	320
60	1080	765	350
65	1170	825	380

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_r) (FEET)
4 LANE UNDIVIDED



PICTORIAL
4 LANE UNDIVIDED FLARED - SYMMETRICAL

Design Speed	d	d_L	d_r
30	375	205	120
35	440	240	145
40	500	275	165
45	565	310	185
50	625	340	205
55	690	375	225
60	750	410	245
65	815	445	265

Passenger Vehicle

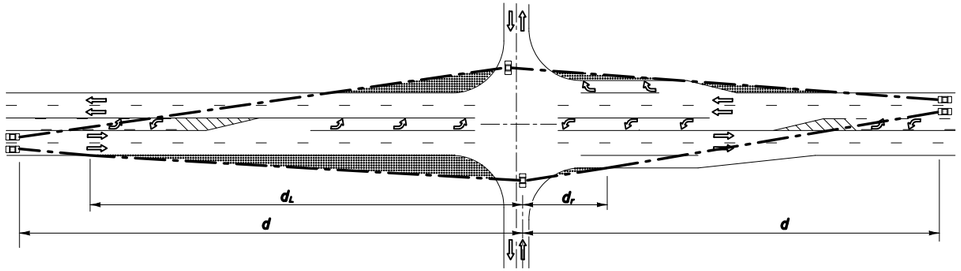
Design Speed	d	d_L	d_r
30	480	220	155
35	560	255	180
40	640	290	210
45	720	330	235
50	800	365	260
55	880	400	285
60	960	440	310
65	1040	480	340

SU Vehicle

Design Speed	d	d_L	d_r
30	570	310	185
35	665	365	215
40	760	415	250
45	855	470	280
50	950	520	310
55	1045	570	340
60	1140	625	370
65	1235	675	400

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_r) (FEET)
4 LANE UNDIVIDED FLARED - SYMMETRICAL



PICTORIAL
4 LANE UNDIVIDED WITH OPTIONAL LANE

Design Speed	d	d_L	d_r
30	375	265	95
35	440	310	115
40	500	355	130
45	565	400	145
50	625	440	160
55	690	490	172
60	750	530	195
65	815	575	210

Passenger Vehicle

Design Speed	d	d_L	d_r
30	480	340	125
35	560	395	145
40	640	450	165
45	720	510	185
50	800	565	205
55	880	620	225
60	960	680	245
65	1040	735	265

SU Vehicle

Design Speed	d	d_L	d_r
30	570	405	145
35	665	470	170
40	760	540	195
45	855	605	220
50	950	670	245
55	1045	740	270
60	1140	805	295
65	1235	875	320

Combination Vehicle

SIGHT DISTANCE (d) AND RELATED DISTANCES (d_L, d_r) (FEET)
4 LANE UNDIVIDED WITH OPTIONAL LANE

LEGEND
Areas Free Of Sight Obstructions

NOTE: See Sheet 6 for intersecting roadway origin of clear sight and quadrant corner clips.

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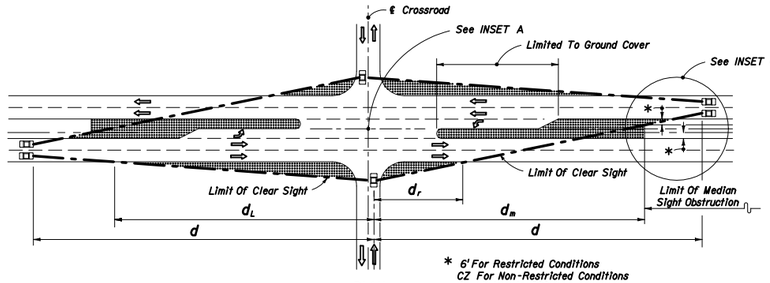
	SIGHT DISTANCE AT INTERSECTIONS		Index No. 546

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



PLAN

PICTORIAL

* 6' For Restricted Conditions
CZ For Non-Restricted Conditions
See Index No. 700

LEGEND

Areas Free Of Sight Obstructions

MEDIAN 22' OR LESS				
Design Speed	d	d_L	d_r	d_m
30	390	280	90	320
35	460	330	100	380
40	520	370	110	430
45	590	420	130	490
50	650	460	140	530
55	720	510	160	590
60	780	550	170	640
65	850	600	190	700

25'-64' MEDIAN				
Design Speed	d	d_L	d_r	d_{VL}
30	290	210	330	230
35	330	230	390	280
40	380	270	440	310
45	430	300	500	350
50	480	340	550	390
55	530	370	610	430
60	570	400	660	470
65	620	440	720	510

PASSENGER VEHICLE (P)

MEDIAN 35' OR LESS				
Design Speed	d	d_L	d_r	d_m
30	540	380	100	460
35	630	450	110	530
40	720	510	130	610
45	810	570	150	690
50	900	640	160	760
55	990	700	180	840
60	1080	760	200	920
65	1170	830	210	990

40'-64' MEDIAN				
Design Speed	d	d_L	d_r	d_{VL}
30	370	260	420	300
35	440	310	490	350
40	500	350	560	400
45	560	400	630	450
50	620	440	700	500
55	690	490	770	540
60	750	530	840	590
65	810	570	910	640

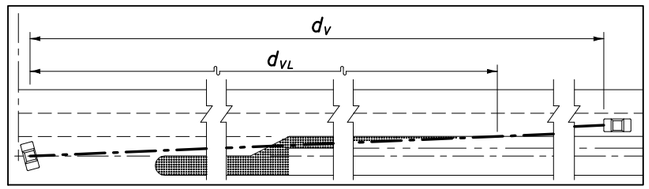
SINGLE-UNIT TRUCK (SU)

MEDIAN 30' OR LESS				
Design Speed	d	d_L	d_r	d_m
30	620	440	120	520
35	720	510	140	600
40	820	580	160	690
45	930	660	180	780
50	1030	730	200	860
55	1130	800	220	950
60	1240	880	240	1040
65	1340	950	260	1120

35'-50' MEDIAN				
Design Speed	d	d_L	d_r	d_m
30	670	470	100	580
35	780	550	120	680
40	880	630	140	780
45	1000	710	150	870
50	1110	790	170	970
55	1220	860	190	1070
60	1330	940	200	1160
65	1440	1020	220	1260

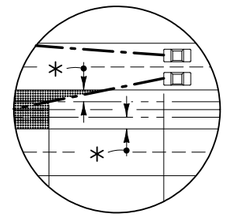
64' MEDIAN				
Design Speed	d	d_L	d_v	d_{VL}
30	460	330	510	360
35	540	380	590	420
40	620	440	680	480
45	690	490	760	540
50	770	540	850	600
55	850	600	930	660
60	920	650	1020	720
65	1000	710	1100	780

INTERMEDIATE SEMI-TRAILERS (WB-40 & WB-50)



Where The Median Is Sufficiently Wide For The Design Vehicle To Pause In The Median (Vehicle Length Plus 6' Min.) The Clear Line Of Sight To The Right (dv) Is Measured From The Vehicle Pause Location, i.e. Not From The Cross Road Stop Position; Distances d_r & d_m Do Not Apply.

INSET A



INSET B

Vehicle Type	Vehicle Length (Ft.)
Passenger (P)	19
Single Unit (SU)	30
Large School Bus	40
WB-40	45.5
WB-50	55

NOTES FOR 4-LANE DIVIDED ROADWAY

1. See Sheet 6 for origin of clear sight line on the minor road.
2. Values shown in the tables are the governing (controlling) sight distances calculated based on 'AASHTO Case B - Intersection with Stop Control on the Minor Road.'

SIGHT DISTANCES (d) & (d_V) AND RELATED DISTANCES (d_L, d_r, d_m & d_{VL}) (FEET)

4 LANE DIVIDED ROADWAY

2006 FDOT Design Standards

SIGHT DISTANCE AT INTERSECTIONS

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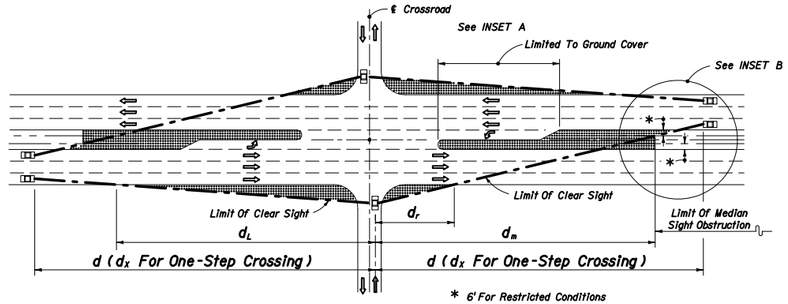
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



PLAN

PICTORIAL

* 6' For Restricted Conditions
CZ For Non-Restricted Conditions
See Index No. 700

LEGEND

Areas Free Of Sight Obstructions

MEDIAN 22' OR LESS				
Design Speed	d_x	d_L	d_r	d_m
30	410	290	80	350
35	480	340	90	410
40	550	390	100	470
45	620	440	110	530
50	690	490	130	580
55	760	540	140	640
60	830	590	150	700
65	900	640	170	760

25'-64' MEDIAN				
Design Speed	d	d_L	d_v	d_{VL}
30	310	220	330	230
35	360	250	390	280
40	410	290	440	310
45	460	330	500	350
50	510	360	550	390
55	570	400	610	430
60	620	440	660	470
65	670	470	720	510

PASSENGER VEHICLE (P)

MEDIAN 35' OR LESS				
Design Speed	d_x	d_L	d_r	d_m
30	590	420	90	510
35	690	490	110	600
40	780	550	120	680
45	880	620	140	760
50	980	690	160	850
55	1080	760	170	940
60	1170	830	190	1020
65	1270	900	200	1100

40'-64' MEDIAN				
Design Speed	d	d_L	d_v	d_{VL}
30	410	290	420	300
35	470	330	490	350
40	540	380	560	400
45	610	430	630	450
50	680	480	700	500
55	740	520	770	540
60	810	570	840	590
65	880	620	910	640

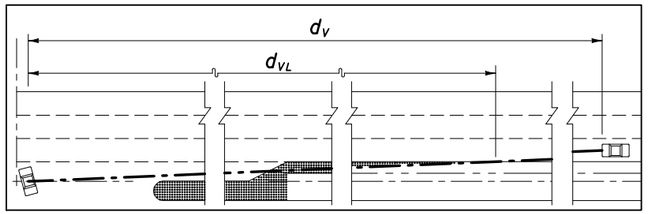
SINGLE-UNIT TRUCK (SU)

MEDIAN 30' OR LESS				
Design Speed	d_x	d_L	d_r	d_m
30	670	470	110	580
35	780	550	130	670
40	890	630	150	770
45	1000	710	170	860
50	1110	790	190	960
55	1220	860	200	1050
60	1330	940	220	1150
65	1440	1020	240	1240

35'-50' MEDIAN				
Design Speed	d_x	d_L	d_r	d_m
30	720	510	100	640
35	830	590	110	740
40	950	670	130	840
45	1070	760	150	950
50	1190	840	160	1060
55	1310	930	180	1160
60	1430	1010	190	1270
65	1550	1100	210	1380

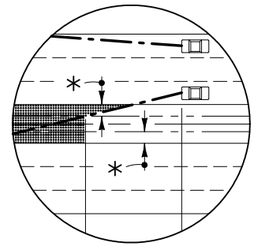
64' MEDIAN				
Design Speed	d	d_L	d_v	d_{VL}
30	490	350	510	360
35	580	410	590	420
40	660	470	680	480
45	740	520	760	540
50	820	580	850	600
55	910	640	930	660
60	990	700	1020	720
65	1070	760	1100	780

INTERMEDIATE SEMI-TRAILERS (WB-40 & WB-50)



Where The Median Is Sufficiently Wide For The Design Vehicle To Pause In The Median (Vehicle Length Plus 6' Min.) The Clear Line Of Sight To The Right (d_V) Is Measured From The Vehicle Pause Location, i.e. Not From The Cross Road Stop Position; Distances d_r & d_m Do Not Apply.

INSET A



INSET B

NOTES FOR 4-LANE DIVIDED ROADWAY

1. See Sheet 6 for origin of clear sight line on the minor road.
2. Values shown in the tables are the governing (controlling) sight distances calculated based on 'AASHTO Case B - Intersection with Stop Control on the Minor Road.'

SIGHT DISTANCES (d), (d_V) & (d_X) AND RELATED DISTANCES (d_L, d_r, d_m & d_{VL}) (FEET)

6 LANE DIVIDED

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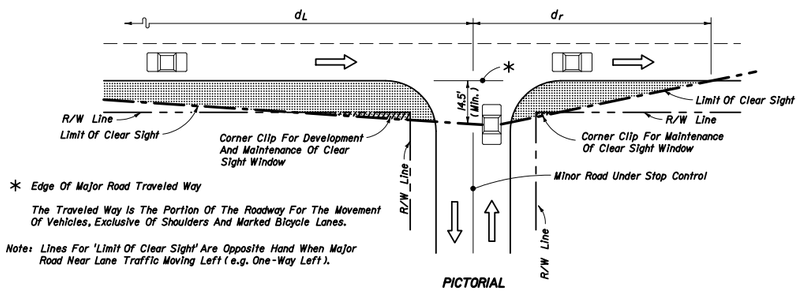
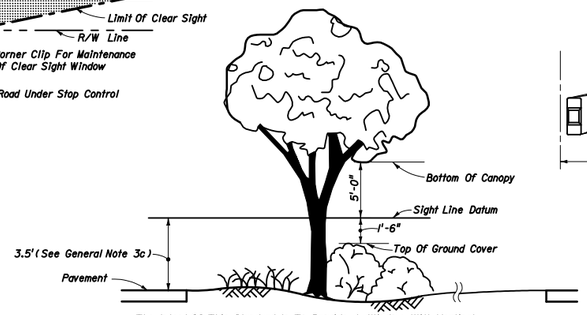


PICTORIAL

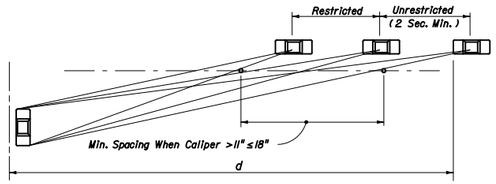
ORIGIN OF CLEAR SIGHT LINE ON MINOR ROAD



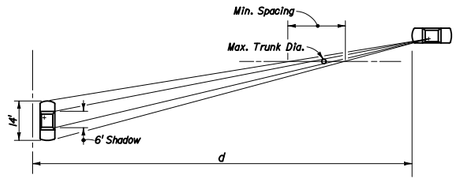
The Intent Of This Standard Is To Provide A Window With Vertical Limits Of Not Less Than 5' Above And 1'-6" Below The Sight Line Datum, And Horizontal Limits Defined By The Limits Of Clear Sight.

PICTORIAL

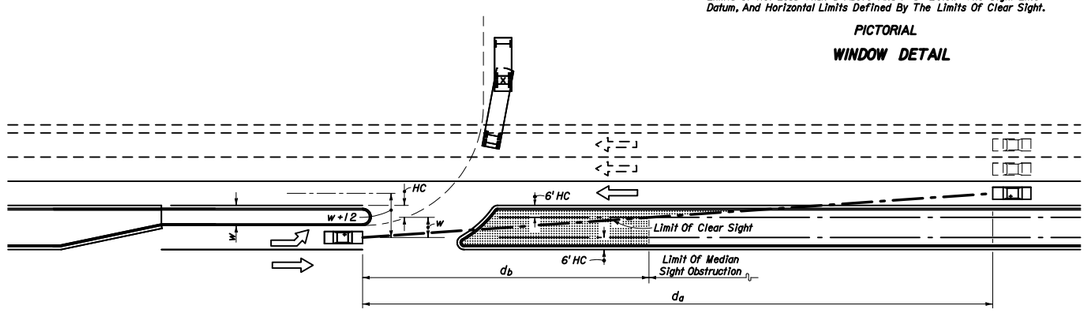
WINDOW DETAIL



PERCEPTION DIAGRAM
SETTING SABAL PALM (STATE TREE) SPACING



SHADOW DIAGRAM



PICTORIAL

d_a (Feet)									
Design Speed MPH	1 Lane Crossed			2 Lanes Crossed			3 Lanes Crossed		
	P	SU	Comb.	P	SU	Comb.	P	SU	Comb.
30	245	285	330	265	320	360	285	350	390
35	285	335	385	310	370	420	335	405	460
40	325	380	440	355	425	480	380	465	525
45	365	430	495	395	475	540	430	520	590

☆ See Note.

☆ The d_a values in this table were established by the method referenced in Design Note 2, and are applicable to urban, predominantly curbed roadways with design speeds of 45 mph or less and meeting the restricted conditions defined in Index No. 700. For horizontal clearance (HC) of six feet (6'), the values for d_b may be determined by the equation $d_b = d_a (w/w+12)$. For roadways with non-restricted conditions, d_a and d_b should be based on the geometry for the left turn storage and on clear zone widths (See Index No. 700).

CHANNELIZED DIRECTIONAL MEDIAN OPENINGS

LEGEND

Areas Free Of Sight Obstructions

2006 FDOT Design Standards

SIGHT DISTANCE AT INTERSECTIONS

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DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

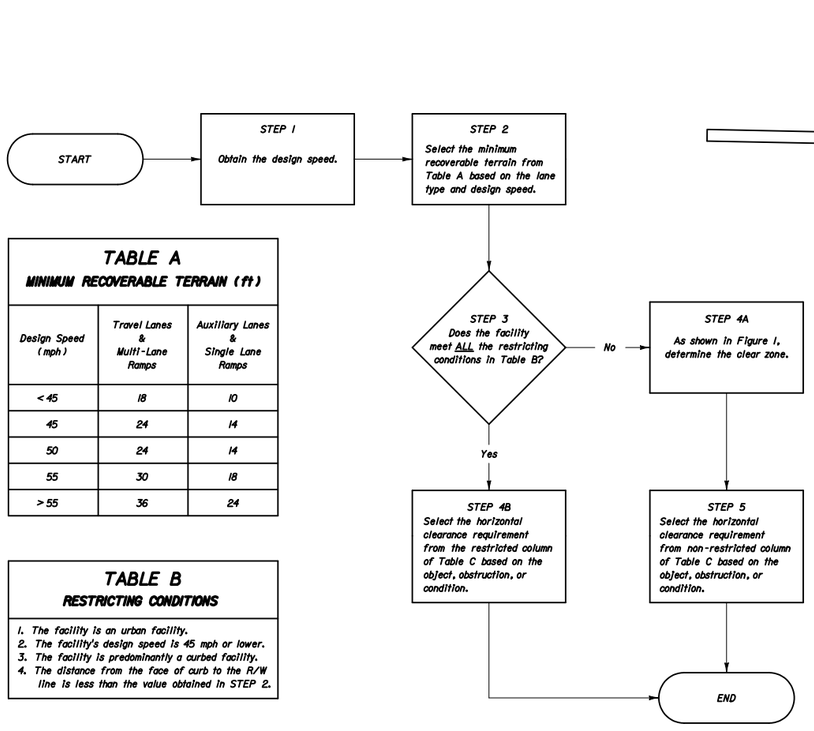
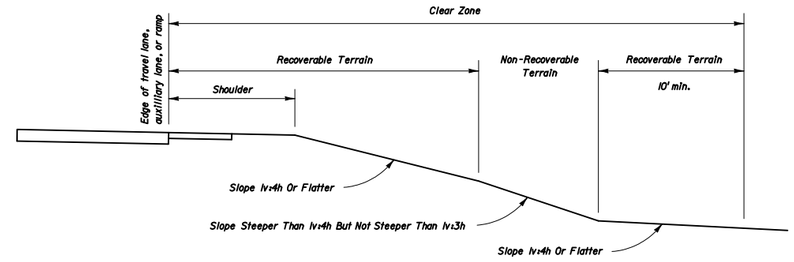


TABLE A
MINIMUM RECOVERABLE TERRAIN (ft)

Design Speed (mph)	Travel Lanes & Multi-Lane Ramps	Auxiliary Lanes & Single Lane Ramps
< 45	18	10
45	24	14
50	24	14
55	30	18
> 55	36	24

TABLE B
RESTRICTING CONDITIONS

1. The facility is an urban facility.
2. The facility's design speed is 45 mph or lower.
3. The facility is predominantly a curbed facility.
4. The distance from the face of curb to the R/W line is less than the value obtained in STEP 2.



Clear Zone is the relatively flat unobstructed area that is to be provided for safe use by errant vehicles, and must be wide enough so that the sum of all the recoverable terrain within is equal to or greater than the value obtained in STEP 2. Recoverable terrain provided beyond non-recoverable terrain must be a minimum of 10 feet. Areas beyond non-traversable and hazardous terrain cannot be used as recoverable or non-recoverable terrain.

Roadside Terrain includes all surfaces along the roadway other than travel lanes, auxiliary lanes, and ramps. For the purpose of establishing clear zones and horizontal clearance requirements, roadside terrain is defined as recoverable, non-recoverable, non-traversable, and hazardous as follows:

- Recoverable when it is safely traversable and on a slope that is 1v:4h or flatter.
- Non-recoverable when it is safely traversable and on a slope that is steeper than 1v:4h but not steeper than 1v:3h.
- Non-traversable when it is not safely traversable or on a slope that is steeper than 1v:3h.
- Hazardous when a slope is steeper than 1v:3h and deeper than 6 feet as shown in Figure 2.

Horizontal Clearance Requirements are shown in Table C and are the required offsets to an object from a specified point on the roadway.

ROADSIDE TERRAIN

FIGURE 1

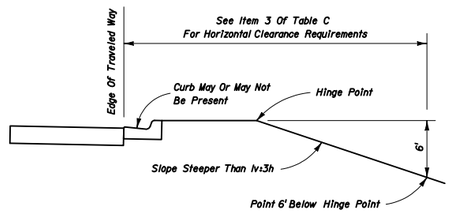
PROCESS FOR DETERMINING HORIZONTAL CLEARANCE REQUIREMENTS AND CLEAR ZONES

2006 FDOT Design Standards	Last Revision 04	Sheet No. 1 of 2
ROADSIDE OFFSETS		Index No. 700

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
2007 UAM	Should the provisions of this Index conflict with any other section of this UAM, the provisions of this Index will be superseded by the requirements found within the other sections of this UAM.

TABLE C

	Item No.	OBJECTS, OBSTRUCTIONS OR CONDITIONS	HORIZONTAL CLEARANCE REQUIREMENTS	
			Restricted	Non-Restricted
GENERAL	1	Above ground fixed hazards: All roadside objects, obstructions or conditions other than those listed below that exceed 4 inches in height and pose a hazard to errant vehicles and vehicle occupants.	Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb.	Locate outside the clear zone as close to the Right Of Way as practical.
ROADWAY	2	All FDOT approved guardrails, crash cushions, permanent or temporary concrete barriers, and guardrail end terminals.	Locate as shown in the Design Standards.	Locate as shown in the Design Standards.
	3	Drop-off hazards: Any point along a roadside slope steeper than 1v:3h that is deeper than 6 feet below the hinge point. See Figure 2.	Locate the point that is 6 feet below the hinge point no less than 22 feet from the traveled way.	Treat as roadside slopes in accordance with Design Standard 400.
	4	Mailboxes not shown in Design Standard 532.	Not to be used.	Not to be used.
	5	Mailboxes shown in Design Standard 532.	Locate in accordance with Design Standard 532.	Locate in accordance with Design Standard 532.
	6	Trees expected to become greater than 4 inches in diameter measured 6 inches above the ground.	Outside roadways: Locate no less than 4 feet from face of curb in accordance with Design Standard 546. Inside medians: Locate no less than 6 feet from the edge of traffic lane and in accordance with Design Standard 546.	Locate outside the clear zone as close to the Right Of Way as practical and in accordance with Design Standard 546.
	7	Trees not expected to become greater than 4 inches in diameter measured 6 inches above the ground.	Locate in accordance with Design Standard 546.	Locate in accordance with Design Standard 546.
	8	Canals behind guardrail.	Locate no less than 5 feet from the back of the guardrail post.	Locate no less than 5 feet from the back of the guardrail post.
	9	Canals without guardrail.	Locate as close to the Right Of Way as practical and not less than 40 feet from the traveled way.	Design speeds of 50 mph and greater: Locate as close to the Right Of Way as practical and not less than 60 feet from the traveled way. Design speeds less that 50 mph: Locate as close to the Right Of Way as practical and not less than 50 feet from the traveled way.
DRAINAGE	10	Culvert wing wall, endwall, retaining walls and flared end sections less than 6 feet deep.	Locate no less than 4 feet from face of curb.	Locate outside the clear zone.
	11	Culvert wing wall, endwall, retaining walls and flared end sections 6 feet and greater in depth.	Treat as drop-off hazard; See Item No. 3.	Treat as drop-off hazard; See Item No. 3.
	12	Mitered end sections.	Locate as shown in Design Standards 272 and 273.	Locate as shown in Design Standards.
TRAFFIC CONTROL DEVICES	13	Frangible sign supports.	Locate no less than 4 feet from face of curb and in accordance with Design Standard 17302.	Locate in accordance with Design Standard 17302.
	14	Overhead sign supports and other non-frangible signs.	Locate no less than 4 feet from face of curb.	Locate outside the clear zone.
	15	Signal controller cabinets, signal poles, strain poles and mast arms.	Locate no less than 4 feet from face of curb and not in medians.	Locate outside the clear zone and not in medians.
LIGHTING	16	Conventional lighting (frangible and non-frangible).	Locate no less than 4 feet from face of curb and not in medians.	Locate 20 feet from travel lanes or 14 feet from auxiliary lanes. Not in medians. May be clear zone width when the clear zone is less than 20 feet.
	17	Highmast lighting.	Not applicable.	Locate outside the clear zone.
STRUCTURES	18	Bridge piers and abutments: Above ground vertical structures.	Locate not less than 16 feet from edge of travel lane.	Locate outside the clear zone.
UTILITIES	19	Fire hydrants with bases no higher than 4 inches above the ground.	Locate not less than 2 feet from face of curb.	Locate as close to the Right Of Way as practical.
	20	Utility installations: All above ground fixed objects.	Locate as close to the Right Of Way as practical and not less than 4 feet from face of curb and not in medians.	Locate outside the clear zone as close to the Right Of Way as practical and not in medians and not within limited access facilities. May be placed 4 feet behind the back of shields that have been justified for other reasons.
RAILROADS	21	Railroad crossing traffic control devices.	Locate in accordance with Design Standard 17882.	Locate in accordance with Design Standard 17882.



DROP-OFF HAZARDS

FIGURE 2

GENERAL NOTES

1. When sidewalks are present, an unobstructed sidewalk width of at least 4 feet must be provided.
2. When site specific conditions prohibit meeting the horizontal clearance requirements in TABLE C, the object, obstruction or condition must be mitigated, possibly by shielding. Otherwise, the Plans Preparation Manual, Volume 1, Chapters 2, 4, 21 and 25, or Chapters 5 and 9 of the Utility Accommodation Manual must be researched to determine viable alternatives. The minimum requirements in these manuals can only be reduced when a Design Variation or Design Exception has been approved in accordance with Chapter 23 of the Plans Preparation Manual, Volume 1 or a Utility Exception has been approved in accordance with Chapter 13 of the Utility Accommodation Manual.

2006 FDOT Design Standards	Last Revision 04	Sheet No. 2 of 2
ROADSIDE OFFSETS	Index No. 700	

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
2007 UAM	Should the provisions of this Index conflict with any other section of this UAM, the provisions of this Index will be superseded by the requirements found within the other sections of this UAM.

PREFACE - APPENDIX C

This Appendix C contains certain Indexes from the Department's 2006 Design Standards for Design, Construction, Maintenance, and Utility Operations on the State Highway System that apply to the vast majority of the Maintenance of Traffic situations encountered by the regulated utility industry. Maintenance of traffic for utilities under other situations may fall outside of the typical applications contained in this Appendix C, and has not been specifically addressed by Department rule. If a situation is encountered by the utility that is not covered by any indexes contained in this Appendix C, then the applicable index from the remaining 2006 Design Standards for Design, Construction, Maintenance, and Utility Operations on the State Highway System Series 600 indexes shall be referenced to determine their suitability for application to the particular situation. These standards may be found on the FDOT's web site at http://www.dot.state.fl.us/rddesign/DesignStandards/Standards.htm. If it is determined that the remaining indexes are not applicable to the particular situation, then generally accepted engineering practices will be applied.

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STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

Appendex C

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

SHEET NO.	CONTENTS
1	Preface Manual On Uniform Traffic Control Devices Abbreviations Symbols
2	Definitions Temporary Traffic Control Devices Pedestrian And Bicyclist Railroads Overhead Work Overweight/Oversize Vehicles Lane Widths Length of Lane Closures Sight Distance Above Ground Hazard Clear Zone Widths For Work Zones Superelevation
3	High-Visibility Safety Apparel Flagger Control Regulatory Speeds In Work Zones Survey Work Zones
4	Sign Placement Adjoining And/Or Overlapping Work Zone Signing Sign Covering And Intermittent Work Stoppage Signing Sign Materials Work Zone Sign Supports Signing for Detours, Lane Shifts & Diversions Extended Distance Advance Warning Signs Intersecting Road Signing Utility Work Ahead Sign Length of Road Work Sign Speeding Fines Doubled When Workers Present Sign Grooved Pavement Ahead Sign End Road Work Signs
5	Manholes/Crosswalks/Joints Truck Mounted Attenuators Removing Pavement Markings Signals Channelizing And Lighting Devices Channelizing And Lighting Devices Consistency Warning Lights Standard Orange Flag Portable Changeable (Variable) Message Signs (PCMS) Advance Warning Arrow Panels
6	Dropoffs In Work Zones
7	Business Entrance Temporary Asphalt Separator
8	Identifications-Channelizing And Lighting Devices
9	Commonly Used Warning and Regulatory Signs In Work Zones
10	Pavement Markings

PREFACE

All projects and works on highways, roads and streets shall have a traffic control plan. All work shall be executed under the established plan and Department approved procedures. This index contains information specific to the Federal and State guidelines and standards for the preparation of traffic control plans and for the execution of traffic control in work zones, for construction and maintenance operations and utility work on highways, roads and streets on the State Highway System. Certain requirements in this Index are based on the high volume nature of State Highways. For highways, roads and streets off the State Highway System, the local agency (City/County) having jurisdiction may adopt requirements based on the minimum requirements provided in the MUTCD.

Index No. 600 provides Department policy and standards. Changes are only to be made thru Department approved procedures. Index Nos. 601 thru 670 provide typical applications for various situations. Modification can be made to these Indexes as long as the changes comply with the MUTCD and Department Design Standards.

The sign spacings shown on the Indexes are typical (recommended) distances. These distances may be increased or decreased based on field conditions, in order to avoid conflicts or to improve site specific traffic controls.

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

The Florida Department of Transportation has adopted the "Manual On Uniform Traffic Control Devices For Streets And Highways" (MUTCD) and subsequent revisions and addendums, as published by the U.S. Department of Transportation, Federal Highway Administration, for mandatory use on the State Maintained Highway System whenever there exists the need for construction, maintenance operations or utility work.

ABBREVIATIONS

Abbreviations assigned to the 600 series Design Standards and applicable to traffic control plans, unless otherwise identified in the plans, are as follows:

CFR	Code of Federal Regulations
DTOE	District Traffic Operations Engineer
FDOT	Florida Department Of Transportation
HAR	Highway Advisory Radio
L	Taper Length, Buffer Length Or Taper Length Plus Buffer Space
MAS	Motorist Awareness System
MOT	Maintenance Of Traffic
MOTC	Maintenance Of Traffic Committee
MUTCD	Manual On Uniform Traffic Control Devices For Streets And Highways
NCHRP	National Cooperative Highway Research Program
PCMS	Portable Changeable (Variable) Message Sign
PRS	Portable Regulatory Sign
R	Radius
RPM	Raised Retroreflective Pavement Marker
RSDU	Radar Speed Display Unit
S	Posted Speed Of Off-Peak 85 Percentile Speed (MPH)
SLEO	Speed and Law Enforcement Officer
TTC	Temporary Traffic Control
TCP	Traffic Control Plan(s)
TCZ	Traffic Control Zones
TMA	Truck Mounted Attenuator
VECP	Value Engineering Change Proposal
W	Width Of Taper Transition In Feet i.e., Lateral Offset

SYMBOLS

The symbols shown are found in the FDOT site menu under Traffic Control cell library on the CADD system. Symbols assigned to the 600 series Design Standards and applicable to traffic control plans, unless otherwise identified in the plans, are as follows:

- Work Area, Hazard Or Work Phase (Any pattern within a boundary)
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device
- Type I Or Type II Barricade Or Vertical Panel Or Drum
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Flashing Light At Night Only)
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only).
- Type I Or Type II Barricade Or Vertical Panel Or Cone Or Tubular Marker Or Drum
- Cone Or Tubular Marker
- Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum
- Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum (With Flashing Light)
- Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum (With Steady Burning Light)
- Type III Barricade
- Type III Barricade (With Flashing Light)
- Type III Barricade (With Steady Burning Light)
- Work Zone Sign
- Flagger
- Traffic Signal
- Advance Warning Arrow Panel
- Portable Signal
- Crash Cushion
- Stop Bar
- Work Vehicle With Flashing Beacon
- Shadow (S) Or Advance Warning (AW) Vehicle With Advance Warning Arrow Panel And Warning Sign
- Truck Mounted Attenuator (TMA)
- Orange Flag For TCZ Signs
- Type B Light For TCZ Signs
- Law Enforcement Officer
- Portable Regulatory Sign
- Radar Speed Display Unit
- Portable Changeable (Variable) Message Sign
- Lane Identification + Direction Of Traffic

2006 FDOT Design Standards

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

Last Revision 07/01/05 | Sheet No. 1 of 10 | Index No. 600

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

DEFINITIONS

Regulatory Speed (In Work Zones)

The maximum permitted travel speed posted for the work zone is indicated by the regulatory speed limit signs. The work zone speed must be shown or noted in the plans. This speed should be used as the minimum design speed to determine runout lengths, departure rates, flare rates, lengths of need, clear zone widths, taper lengths, crash cushion requirements, marker spacings, superelevation and other similar features.

Advisory Speed

The maximum recommended travel speed through a curve or a hazardous area.

Travel Way

The portion of the roadway for the movement of vehicles. For traffic control through work zones, travel way may include the temporary use of shoulders and any other permanent or temporary surface intended for use as a lane for the movement of vehicular traffic.

Detour, Lane Shift, and Diversion

A detour is the redirection of traffic onto another roadway to bypass the temporary traffic control zone. A lane shift is the redirection of traffic onto a different section of the permanent pavement. A diversion is the redirection of traffic onto a temporary roadway, usually adjacent to the permanent roadway and within the limits of the right-of-way.

Above Ground Hazard

An above ground hazard is any object, material or equipment other than traffic control devices that encroaches upon the travel way or that is located within the clear zone which does not meet the Department's safety criteria, i.e., anything that is greater than 4" in height and is firm and unyielding or doesn't meet breakaway requirements.

TEMPORARY TRAFFIC CONTROL DEVICES

All temporary traffic control devices shall be removed as soon as practical when they are no longer needed. When work is suspended for short periods of time, temporary traffic control devices that are no longer appropriate shall be removed or covered. Arrow Panels, Portable Changeable Message Signs, Radar Speed Display Trailers, Portable Regulatory Signs, and any other NCHRP 350 Category 4 devices shall be delineated with retroreflective TTC devices when in use and shall be moved outside the travel way and clear zone or be shielded by a barrier or crash cushion when not in use.

PEDESTRIAN AND BICYCLIST

When an existing pedestrian way or bicycle way is located within a traffic control work zone, accommodation must be maintained and provision for the disabled must be provided.

Only approved temporary traffic control devices may be used to delineate a temporary traffic control zone pedestrian walkway.

Advanced notification of sidewalk closures and marked detours shall be provided by appropriate signs.

RAILROADS

Railroad crossings affected by a construction project should be evaluated for traffic controls to reduce queuing on the tracks. The evaluation should include as a minimum: traffic volumes, distance from the tracks to the intersections, lane closure or taper locations, signal timing, etc.

OVERHEAD WORK

Work is only allowed over a traffic lane when one of the following options is used:

OPTION 1 (OVERHEAD WORK USING A MODIFIED LANE CLOSURE)

Overhead work using a modified lane closure is allowed if all of the following conditions are met:

a. Work operation is located in a signalized intersection and limited to signals, signs, lighting and utilities.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
e. Aerial lift equipment is placed directly below the work area to close the lane.
f. Traffic control devices are placed in advance of the vehicle/equipment closing the lane using a minimum 100 foot taper.
g. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.

OPTION 2 (OVERHEAD WORK ABOVE AN OPEN TRAFFIC LANE)

Overhead work above a open traffic lane is allowed if all of the following conditions are met:

a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances.
b. Work operations are 60 minutes or less.
c. Speed limit is 45 mph or less.
d. No encroachment by any part of the work activities and equipment within an area bounded by 2 feet outside the edge of travel way and 18 feet high.
e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating.
f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer.
g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic.
h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

OPTION 3 (OVERHEAD WORK USING A STANDARD LANE CLOSURE)

The lane directly below the overhead work is closed in accordance with the appropriate standard index drawing or detailed in the plans.

OVERWEIGHT/OVERSIZE VEHICLES

Restrictions to Lane Widths, Heights or Load Capacity can greatly impact the movement of over dimensioned loads. The Contractor shall notify the Engineer who in turn shall notify the State Permits Office, phone no. (850) 410-5777, at least seven calendar days in advance of implementing a maintenance of traffic plan which will impact the flow of overweight/oversized vehicles. Information provided shall include location, type of restriction (height, width or weight) and restriction time frames. When the roadway is restored to normal service the State Permits Office shall be notified immediately.

LANE WIDTHS

Lane widths of through roadways should be maintained through work zone travel ways wherever practical. The minimum widths for work zone travel lanes shall be as follows: 11' for interstate with at least one 12' lane provided in each direction, unless formally expected by the Federal Highway Administration; 11' for freeways; and 10' for all other facilities.

LENGTH OF LANE CLOSURES

Lane closures shall not exceed 2 miles in total length in any given direction on the Interstate or on state highways with a posted speed of 55 MPH or greater.

SIGHT DISTANCE

Tapers: Transition tapers should be obvious to drivers. If restricted sight distance is a problem (e.g., a sharp vertical or horizontal curve), the taper should begin well in advance of the view obstruction. The beginning of tapers should not be hidden behind curves.

Intersections: Traffic control devices at intersections must provide sight distances for the road user to perceive potential conflicts and to traverse the intersection safely.

ABOVE GROUND HAZARD

Above ground hazards (see definitions) are to be considered work areas during working hours and treated with appropriate work zone traffic control procedures. During non-working hours, all objects, materials and equipment that constitute an above ground hazard must be stored/placed outside the travel way and clear zone or be shielded by a barrier or crash cushion.

For above ground hazards within a work zone the clear zone required should be based on the regulatory speed posted during construction.

CLEAR ZONE WIDTHS FOR WORK ZONES

The term 'clear zone' describes the unobstructed relatively flat area, impacted by construction, extending outward from the edge of the travel lane. The table below gives clear zone widths in work zones for medians and roadside conditions other than for roadside canals; where roadside canals are present, clear zone widths are to conform with the distances to canals as described in Volume I Chapter 4, Sec 4.2 and Exhibit 4-A and 4-B of the Plans Preparation Manual.

CLEAR ZONE WIDTHS FOR WORK ZONES

WORK ZONE SPEED (MPH)	WIDTHS (feet)
60-70	30
55	24
45-50	18
30-40	14
ALL SPEEDS CURB & GUTTER	4' BEHIND FACE OF CURB

SUPERELEVATION

Horizontal curves constructed in conjunction with work zone traffic control should have the required superelevation applied to the design radii. Under conditions where normal cross slope controls curvature, the minimum radii that can be applied are listed in the table below.

MINIMUM RADII FOR NORMAL CROSS SLOPES

DESIGN SPEED	MINIMUM RADIUS
MPH	feet
65	3130
60	2400
55	1840
50	1390
45	1080
40	820
35	610
30	430
Superelevate When Smaller Radii Used	

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	Under the heading OVERHEAD WORK - OPTION 2 add the following text at the end. "OPTION 2a (OVERHEAD WORK ADJACENT TO AN OPEN TRAFFIC LANE) Overhead work adjacent to an open traffic lane is allowed if all of the following conditions are met: a. Work operation is located on a utility pole, light pole, signal pole, or their appurtenances. b. Work operations are 1 day or less. c. Speed limit is 45 mph or less. d. No encroachment by any part of the work activities and equipment within 2 feet from the edge of travelway up to 18 feet in height. Above 18 feet in height, no encroachment by any part of the work activities and equipment over the open traffic lane (except as allowed in Option 2 for work operations of 60 minutes or less). e. Aerial lift equipment in the work area has high-intensity, rotating, flashing, oscillating, or strobe lights operating. f. Volume or complexity of the roadway may dictate additional devices, signs, flagmen and/or a traffic control officer. g. Adequate precautions are taken to prevent parts, tools, equipment and other objects from falling into open lanes of traffic. h. Other Governmental Agencies, Rail facilities, or Codes may require a greater clearance. The greater clearance required prevails as the rule.

HIGH-VISIBILITY SAFETY APPAREL

All high-visibility safety apparel shall meet the requirements of the International Safety Equipment Association (ISEA) and the American National Standards Institute (ANSI) for High-Visibility Safety Apparel", and labeled as ANSI/ISEA 107-1999 or ANSI/ISEA 107-2004. The apparel background (outer) material color shall be either fluorescent orange-red or fluorescent yellow-green as defined by the standard. The retroreflective material shall be either orange, yellow, white, silver, yellow-green, or a fluorescent version of these colors, and shall be visible at a minimum distance of 1,000 feet. Class 3 apparel may be substituted for Class 2 apparel. Replace apparel that is not visible at 1,000 feet.

WORKERS: All workers within 15 feet of the edge of travel way shall wear ANSI/ISEA Class 2 apparel. Workers operating machinery or equipment in which loose clothing could become entangled during operation shall wear fitted high-visibility safety apparel.

UTILITIES: When other industry apparel safety standards require utility workers to wear apparel that is inconsistent with FDOT requirements such as NFPA, OSHA, ANSI, etc., the other standards for apparel may prevail.

FLAGGERS: For daytime activities, Flaggers shall wear ANSI/ISEA Class 2 apparel. For nighttime activities, Flaggers shall wear ANSI/ISEA Class 3 apparel.

FLAGGER CONTROL

Where flaggers are used, a FLAGGER symbol or legend sign must replace the WORKERS symbol or legend sign.

The flagger must be clearly visible to approaching traffic for a distance sufficient to permit proper response by the motorist to the flagging instructions, and to permit traffic to reduce speed or to stop as required before entering the work site. Flaggers shall be positioned to maintain maximum color contrast between the Flagger's high-visibility safety apparel and equipment and the work area background.

Hand-Signaling Devices

STOP/SLOW paddles are the primary hand-signaling device. The STOP/SLOW paddle shall have an octagonal shape on a rigid handle. STOP/SLOW paddles shall be at least 24 inches wide with letters at least 6 inches high and should be fabricated from light semi-rigid material. The background of the STOP face shall be red with white letters and border. The background of the SLOW face shall be orange with black letters and border. When used at night-time, the STOP/SLOW paddle shall be retroreflectorized.

Flag use is limited to immediate emergencies, intersections, and when working on the centerline or shared left turn lanes where two (2) flaggers are required and there is opposing traffic in the adjacent lanes. Flags, when used, shall be a minimum of 24 inches square, made of a good grade of red material, and securely fastened to a staff that is approximately 36 inches in length. When used at nighttime, flags shall be retroreflectorized red.

Flashlight, lantern or other lighted signal that will display a red warning light shall be used at night.

Flagger Stations

Flagger stations shall be located far enough in advance of the work space so that approaching road users will have sufficient distance to stop before entering the work space. When used at nighttime, the flagger station shall be illuminated.

REGULATORY SPEEDS IN WORK ZONES

Traffic Control Plans (TCPs) for all projects must include specific regulatory speeds for each phase of work. This can either be the posted speed or a reduced speed. The speed shall be noted in the TCPs; this includes indicating the existing speed if no reduction is to be made. Regulatory speeds are to be uniformly established through each phase.

In general, the regulatory speed should be established to route vehicles safely through the work zone as close as to normal highway speed as possible. The regulatory speed should not be reduced more than 10 mph below the posted speed and never below the minimum statutory speed for the class of facility. When a speed reduction greater than 10 mph is imposed, the reduction is to be done in 10 mph per 500' increments.

Temporary regulatory speed signs shall be removed as soon as the conditions requiring the reduced speed no longer exist. Once the work zone regulatory speeds are removed, the regulatory speed existing prior to construction will automatically go back into effect unless new speed limit signing is provided for in the plans.

On projects with inter spaced work activities, speed reductions should be located in proximity to those activities which merit a reduced speed, and not "blanketed" for the entire project. At the departure of such activities, the normal highway speed should be posted to give the motorist notice that normal speed can be resumed.

If the existing regulatory speed is to be used, consideration should be given to supplementing the existing signs when the construction work zone is between existing regulatory speed signs. For projects where the reduced speed conditions exist for greater than 1 mile in rural areas (non-interstate) and on rural or urban interstate, additional regulatory speed signs are to be placed at no more than 1 mile intervals. Engineering judgement should be used in placement of the additional signs. Locating these signs beyond ramp entrances and beyond major intersections are examples of proper placement. For urban situations (non-interstate), additional speed signs are to be placed at a maximum of 1000' apart.

When field conditions warrant speed reductions different from those shown in the TCP the contractor may submit to the project engineer for approval by the Department, a signed and sealed study to justify the need for further reducing the posted speed, or, the engineer may request the District Traffic Operations Engineer (DTOE) to investigate the need. It will not be necessary for the DTOE to issue regulations for regulatory speeds in work zones due to the revised provisions of F.S. 316.0745(2)(b). Advisory Speed plates will be used at the option of the field engineer for temporary use while processing a request to change the regulatory speed specified in the plans when deemed necessary. Advisory speed plates cannot be used alone but must be placed below the construction warning sign for which the advisory speed is required.

For additional information refer to the FDOT Roadway Plans Preparation Manual, Volume I, Chapter 10.

SURVEY WORK ZONES

The SURVEY CREW AHEAD symbol or legend sign shall be the principal Advance Warning Sign used for Traffic Control Through Survey Work Zones and may replace the ROAD WORK AHEAD sign when lane closures occur, at the discretion of the Party Chief. Type B Light or dual orange flags shall be used at all times to enhance the SURVEY CREW AHEAD sign, even with mesh signs.

When Traffic Control Through Work Zones is being used for survey purposes only, the END ROAD WORK sign as called for on certain 600 Series Indexes should be omitted.

Survey Between Active Traffic Lanes or Shared Left Turn Lanes

The following provisions apply to Main Roadway Traffic Control Work Zones. These provisions must be adjusted by the Party Chief to fit roadway and traffic conditions when the Survey Work Zone includes intersections.

(A) A STAY IN YOUR LANE (MOT-1-04) sign shall be added to the Advance Warning Sign sequence as the second most immediate sign from the work area.

(B) Elevation Surveys-Cones may be used at the discretion of the Party Chief to protect prism holder and flagger(s). Cones, if used, may be placed at up to 50' intervals along the break line throughout the work zone.

(C) Horizontal Control-With traffic flow in the same direction, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' towards the flow of traffic.

(D) Horizontal Control-With traffic flow in opposite directions, cones shall be used to protect the backsight tripod and/or instrument. Cones shall be placed at the equipment, and up to 50' intervals for at least 200' in both directions towards the flow of traffic.

##STANDARD YEAR##	#Label1# #Label2# 07/01/05	Sheet No. 3 of 10
GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES		Index No. 600

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	Under the heading HIGH-VISIBILITY SAFETY APPAREL, subheading WORKERS: Add the following text to the end: "Workers inside the bucket of a bucket truck are not required to wear high-visibility safety apparel"

SIGN PLACEMENT

Post-mounted signs installed at the side of the road shall be mounted at a height at least 7 feet measured from the bottom of the sign to a horizontal line extended from the near edge of the pavement. Signs mounted on barricades, or other portable supports shall be no less than 1 foot above the traveled way.

ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING

Adjoining work zones may not have sufficient spacing for standard placement of signs and other traffic control devices in their advance warning areas or in some cases other areas within their traffic control zones. Where such restraints or conflicts occur or are likely to occur, one of the following methods will be employed to avoid conflicts and prevent conditions that could lead to misunderstanding on the part of the traveling public as to the intended travel way by the traffic control procedure applied:

(A) For scheduled projects the engineer in responsible charge of project design will resolve anticipated work zone conflicts during the development of the project traffic control plan. This may entail revision of plans on preceding projects and coordination of plans on concurrent projects.

(B) Unanticipated conflicts arising between adjoining in progress highway construction projects will be resolved by the Resident Engineer for projects under his residency, and, by the District Construction Engineer for in progress projects under adjoining residencies.

(C) The District Maintenance Engineer will resolve anticipated and occurring conflicts within scheduled maintenance operations.

(D) The Unit Maintenance Engineer will resolve conflicts that occur within routine maintenance works; between routine maintenance work, unscheduled work and/or permitted work; and, between unit controlled maintenance works and highway construction projects.

SIGN COVERING AND INTERMITTENT WORK STOPPAGE SIGNING

Existing signs that conflict with temporary work zone signing shall be removed or covered as approved by the Engineer. Traffic control signs that require covers when no work is being performed in a work area shall be fully covered with a durable opaque sheet material.

Plastic film and woven fabrics including burlap will not be permitted.
Covering of only the legend or symbol will not be permitted.
Reflective coverings will not be permitted.
Hinged signs designed to cover when folded will be permitted.

Covers, hinged panels and intermittent work stoppage shields and plaques are incidental to work operation signs and are not to be paid for separately.

SIGN MATERIALS

Mesh signs may be used only for Daylight Operations as noted in the standards. Type B Lights and Orange Flags are not required except for survey work zones.

Vinyl signs may be used for Day or Night Operations not to exceed 1 day except as noted in the standards. Type B Lights and Orange Flags are not required except for survey work zones.

WORK ZONE SIGN SUPPORTS

All signs shall be post mounted when work operations exceed 1 day except as noted in the standards.

Signs mounted on temporary supports or barricades, and barricade/sign combination shall be crashworthy in accordance with NCHRP 350 requirements and included on the Qualified Products List (QPL).

All post mounted Work Zone signs shall be installed on either round aluminum or steel channel post as specified in the table below.

SUPPORTS FOR MAINTENANCE OF TRAFFIC SIGNS

SIGN SIZE	SIGN BRACKET	ROUND ALUMINUM	DEPTH IN GROUND	STEEL CHANNEL	DEPTH IN GROUND
24" x 36"	2-I	NPS 2.0" x 1/8"	2'-0"	2.5 lb F/M*	3'-0"
48" x 48" DIAMOND	2-I & I-II	NPS 3.5" x 3/16"	3'-4"	**	3'-0"
60" x 48"	3-I	NPS 3.5" x 3/16"	3'-4"	**	3'-0"
24" x 30"	2-I	NPS 2.0" x 1/8"	2'-0"	2.5 lb F/M*	3'-0"
48" x 48"	2-II	NPS 3.0" x 1/8"	2'-6"	**	3'-0"
60" x 24"	3-I	NPS 3.0" x 1/8"	2'-6"	3.0 lb F/M*	3'-0"
60" x 36"	3-I	NPS 3.5" x 3/16"	3'-4"	4.0 lb F/M*	3'-0"

* F/M Indicates Type F or Type M
** Requires two 3 lb/ft steel channel (F/M) at 2'-6" center to center.
All sign brackets shall be Type 1. The total number of brackets shall be per post as tabulated, except the "Diamond" sign which shall use two Type I brackets per post.
The 4 lb/ft steel channel shall be installed with approved breakaway bases. Refer to Index No. 11860, Sheet 3, for round aluminum sign bracket details, and Index No. 11865, Sheet 2, for steel channel breakaway bases, and notes.

SIGNING FOR DETOURS, LANE SHIFTS AND DIVERSIONS

Detours should be signed clearly over their entire length so that motorists can easily determine how to return to the original roadway. The reverse curve (W1-4) warning sign should be used for the advanced warning for a lane shift. A diversion should be signed as a lane shift.

EXTENDED DISTANCE ADVANCE WARNING SIGN

Advance Warning Signs shall be used at extended distance of one-half mile or more when limited sight distance or the nature of the obstruction may require a motorist to bring their vehicle to a stop. Extended distance Advanced Warning Signs may be required on any type roadway, but particularly be considered on multi-lane divided highways where vehicle speed is generally in the higher range (45 MPH or more).

INTERSECTING ROAD SIGNING

Signing for the control of traffic entering and leaving work zones by way of intersecting highways, roads and streets shall be adequate to make drivers aware of work zone conditions. Under no condition will intersecting leg signing be less than a ROAD WORK AHEAD sign.

UTILITY WORK AHEAD SIGN

The UTILITY WORK AHEAD (W21-7) sign may be used as an alternate to the ROAD WORK AHEAD or the ROAD WORK XX FT (W20-1) sign for utility operations on or adjacent to a highway.

LENGTH OF ROAD WORK SIGN

The length of road work sign (G20-1) bearing the legend ROAD WORK NEXT____ MILES is required for all projects of more than 2 miles in length. The number of miles entered should be rounded up to the nearest mile. The sign shall be located at begin construction points.

SPEEDING FINES DOUBLED WHEN WORKERS PRESENT SIGN

The SPEEDING FINES DOUBLED WHEN WORKERS PRESENT sign should be installed on all projects, but may be omitted if the work operation is less than 1 day. The placement should be 500 feet beyond the ROAD WORK AHEAD sign or midway to the next sign whichever is less.

GROOVED PAVEMENT AHEAD SIGN

The GROOVED PAVEMENT AHEAD sign is required 500 feet in advance of a milled or grooved surface open to traffic.

END ROAD WORK SIGN

The END ROAD WORK sign (G20-2A) should be installed on all projects, but may be omitted where the work operation is less than 1 day. The sign should be placed approximately 500 feet beyond the end of a construction or maintenance project unless other distance is called for in the plans. When other Construction or Maintenance Operations occur within 1 mile this sign should be omitted and signing coordinated in accordance with Index No. 600, ADJOINING AND/OR OVERLAPPING WORK ZONE SIGNING.

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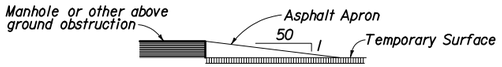
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

MANHOLES/CROSSWALKS/JOINTS

Manholes extending 1" or more above the travel lane and crosswalks having an uneven surface greater than $\frac{1}{4}$" shall have a temporary asphalt apron constructed as shown in the diagram below.

All transverse joints that have any difference in elevation shall have a temporary asphalt apron constructed as shown in the diagram below.



The apron is to be removed prior to constructing the next lift of asphalt. The cost of the temporary asphalt shall be included in the contract unit price for Maintenance of Traffic, LS.

TRUCK MOUNTED ATTENUATORS

Truck-mounted attenuators (TMA) can be used for moving operations and short-term stationary operations. For moving operations, see Index Nos. 607 and 619. For short-term, stationary operations, see Part VI of the MUTCD.

REMOVING PAVEMENT MARKINGS

Existing pavement markings that conflict with temporary work zone delineation shall be removed by any method approved by the Engineer, where operations exceed one daylight period; however, painting over existing pavement markings will not be permitted. Full pavement width overlays of either a structural or friction course are a positive means to achieve obliteration.

SIGNALS

Existing traffic signal operations that require modification in order to carry out work zone traffic control shall be included in the TCP and be approved by the District Traffic Operations Engineer.

Maintain all existing actuated or traffic responsive mode signal operations for main and side street movements for the duration of the Contract and require restoration of any loss of detection within 12 hours. The contractor shall select only detection technology listed on the Department's Approved Products List (APL) and approved by the Engineer to restore detection capabilities. The plans should identify the intersections where Temporary Traffic Detection is required.

CHANNELIZING AND LIGHTING DEVICES

Channelizing and lighting devices for work zone traffic control shall be as prescribed in Part VI of the MUTCD, subject to supplemental revisions provided in the contract documents.

Primary work zone traffic control devices are shown on Sheet 8 for the purpose of ready identification. Approved devices are listed on the Department's Qualified Product List.

CHANNELIZING AND LIGHTING DEVICE CONSISTENCY

Barricades, vertical panels, cones, tubular markers and drums shall not be intermixed within either the lateral transition or within the tangent alignment.

WARNING LIGHTS

Warning lights shall be in accordance with Section 6F-78 of the MUTCD except for the application limitations stipulated below:

Flashing
Type A Low Intensity Flashing Warning Lights are to be mounted on barricades, drums, vertical panels or advance warning signs (except as noted below) and are intended to continually warn drivers that they are approaching or proceeding in a hazardous area. Flashing lights shall not be used to delineate the intended path of travel, and not placed with spacings that will form a continuous line to the drivers eye. The Type A light will be used to mark obstructions that are located adjacent to or in the intended travel way. Type A lights shall not be used in conjunction with the first advance warning sign nor the second such sign when used.

For post-mounted signs, Type B High Intensity Flashing Warning Lights shall be mounted on the first advanced warning sign and on the first and second advanced warning sign where two or more signs are used; this applies to all approaches to any work zone. The light shall be mounted on the channel post or on the upper edge of the sign nearest the traffic.

Steady-Burn
Type C Steady-Burn Lights are to be mounted on barricades, drums, concrete barrier walls or vertical panels and used in combination with those devices to delineate the travel way on lane closures, lane changes, diversion curves and other similar conditions. Steady-burn lights are intended to be placed in a line to delineate the traveled way through and around obstructions in the transition, buffer, work and termination areas of the traffic control zone. Their intended purpose is not for warning drivers that they are approaching or proceeding through a hazardous area.

STANDARD ORANGE FLAG

For post-mounted signs a standard orange flag 18" x 18" (min.) shall be mounted on the first advanced warning sign and on the first and second advanced warning sign where two or more signs are used; this applies to all approaches to any work zone. The flag shall be mounted on the channel post or on the upper edge of the sign furthest from traffic.

PORTABLE CHANGEABLE (VARIABLE) MESSAGE SIGNS (PCMS)

The PCMS can be used to:
(1) Supplement standard signing in construction or maintenance work zones.
(2) Reinforce static advance warning messages.
(3) Provide motorists with updated guidance information.

PCMS should be placed approx. 500 to 800 feet in advance of the work zone conflicts or 1.5 to 2 miles in advance of complex traffic control schemes which require new and/or unusual traffic maneuvers.

If PCMS are to be used at night, the intensity of the flashers shall be reduced during darkness when lower intensities are desirable.

For additional information refer to the FDOT Roadway Plans Preparation Manual, Volume I, Chapter 10.

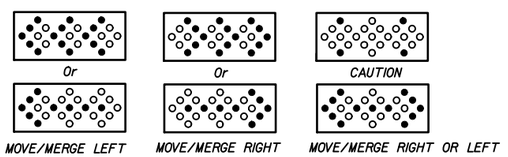
ADVANCE WARNING ARROW PANELS

An arrow panel in the arrow or chevron mode shall be used only for stationary or moving lane closures on multi-lane roadways.

For shoulder work, blocking the shoulder, for roadside work near the shoulder, or for temporarily closing one lane on a two-lane, two-way roadway, an arrow panel shall be used only in the caution mode.

A single arrow panel shall not be used to merge traffic laterally more than one lane. When arrow panels are used to close multiple lanes, a single panel shall be used at the merging taper for each closed lane.

When Advance Warning Arrow Panels are used at night, the intensity of the flashers shall be reduced during darkness when lower intensities are desirable.



● Minimum Required Lamps
○ Additional Lamps Allowed

MODES

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DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	"MANHOLES/CROSSWALKS/JOINTS", the second paragraph is deleted and the following substituted: "All transverse joints that have a difference in elevation of 1" or more shall have a temporary asphalt apron constructed as shown in the diagram below."

DROPOFF CONDITION NOTES

1. A dropoff is defined as a drop in elevation, parallel to the adjacent travel lanes, greater than 3" with slopes (A:B) steeper than 1 : 4. When dropoffs occur within the clear zone due to construction or maintenance activities, protection devices are required. See chart.
2. Distance X is to be the maximum practical under project conditions.
3. Distance from the travel lane to the barrier or warning device should be maximum practical for project conditions.
4. Any dropoff condition that is created and restored within the same work period will not be subject to the use of barriers; however, warning devices will be required.
5. When permanent curb heights are ≥ 6", no warning device will be required. For curb heights < 6", see chart.

DROPOFF NOTES

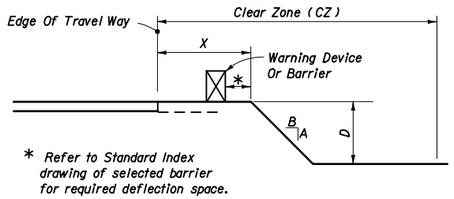
1. These conditions and treatments can be applied only in work areas that fall within a properly signed work zone.
2. The following are defined as acceptable warning devices:
   a. Vertical panel
   b. Type I Or Type II barricades
   c. Drum
   d. Cone (where allowed)
   e. Tubular marker (where allowed)
3. Where a barrier is specified, any of the types below may be used in accordance with the applicable Index:

Index No.	Description
400	Temporary guardrail and end anchorage
412	Temporary low profile barrier
414	Type K temporary concrete barrier
415	Temporary concrete barrier
416	Temporary water filled barrier

4. Warning device spacing shall be as shown in Table I.

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100



* Refer to Standard Index drawing of selected barrier for required deflection space.

DROPOFF PROTECTION REQUIREMENTS ALL SPEEDS NO CURB AND GUTTER		
X (ft)	D (in)	Device Required
0-CZ	≤ 3	Sign W8-9A
0-12	> 3	Barrier
12-CZ	> 3 to ≤ 5	Warning Device
0-CZ	> 5	Barrier

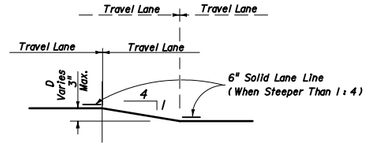
For Clear Zone widths, see Index No. 600 sheet 2.

SHOULDER TREATMENT

NOTES

1. Shoulder treatment may be used in lieu of barrier. Warning devices are required.
2. Daily inspections shall be conducted to assure that no erosion, excessive slopes, rutting, or other adverse conditions exist. Any deficiencies shall be repaired immediately.
3. Compensation for the placement and removal of the material required for the shoulder treatment shall be included in the cost for Maintenance Of Traffic, LS. Use of shoulder treatment in lieu of a barrier is not eligible for VECP consideration.

TRAVEL LANE TREATMENT FOR MILLING OR RESURFACING



NOTES

1. This treatment applies to resurfacing or milling operations between adjacent travel lanes.
2. Whenever there is a difference in elevation between adjacent travel lanes, the W8-11 sign with "UNEVEN LANES" is required at intervals of ½ mile maximum.
3. If D is 1½" or less, no treatment is required.
4. Treatment allowed only when D is 3" or less.
5. If the slope is steeper than 1:4 (not to be steeper than 1:1), the R4-1 and MOT-1-04 signs shall be used as a supplement to the W8-11; this condition should never exceed 3 miles in length.

DROPOFFS IN WORK ZONES

2006 FDOT Design Standards

GENERAL INFORMATION FOR TRAFFIC CONTROL THROUGH WORK ZONES

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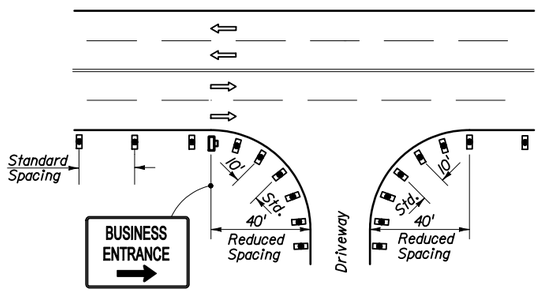
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	Delete the "DROPOFF PROTECTION REQUIREMENTS" table and insert the following:

DROP-OFF PROTECTION REQUIREMENTS ALL SPEEDS NO CURB AND GUTTER

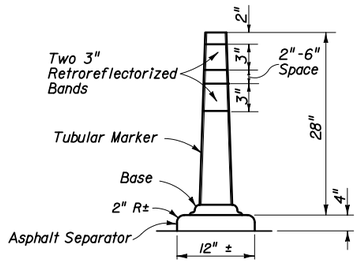
X (ft.)	D (In.)	Device Required
0-12	> 3	Barrier
12-CZ	> 3 to ≤ 5	Warning Device
0-CZ	> 5	Barrier

For Clear Zone widths, see Index No. 600 sheet 2.

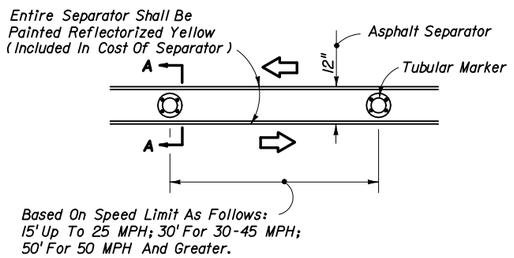


1. Sign height shall be 7' minimum. Sign offset from edge of travel way should be between 6' and 10' and relatively consistent through the project phase.
2. Signs should show specific business names. Logos may be provided by business owners. BUSINESS ENTRANCE sign in accordance with Index 17355 may be used when approved by the Engineer.
3. Place one business sign for each driveway entrance affected. When several businesses share a common driveway entrance, place one sign per common driveway entrance.
4. Channelizing devices should be placed at a reduced spacing on each side of the driveway entrance as to not to interfer with providing sight distances for the driveway user.

PLACEMENT OF BUSINESS ENTRANCE SIGNS AND CHANNELIZING DEVICES AT BUSINESS ENTRANCE



SECTION AA



PLAN

1. The tubular marker is to be made of a flexible material or have a flexible joint at the base such that it will not cause damage to vehicles upon impact and will return to its original shape after being struck by a 5000 lb. vehicle at a velocity of 75 ft/sec.
2. The tubular marker shall be orange with two white retroreflective bands.
3. The tubular marker may be attached by bituminous adhesive or other methods approved by the Engineer.
4. Reflectorized materials shall have a smooth sealed outer surface which will display the same approximate color day and night.
5. 12" openings for drainage will be constructed in the separator island every 25' in areas with grades of 1% or less or every 50' in areas with grades over 1% as directed by the Engineer.
6. Two-Way Traffic sign(s) shall be repeated every $\frac{1}{4}$ mile in each direction, throughout the limits where the temporary traffic separator is used.
7. The Contractor has the option of using temporary traffic separators and tubular type warning devices from the qualified products list in lieu of the temporary asphalt separator and tubular warning device detailed on this sheet.
8. Temporary traffic separator shall be paid for under the contract unit price for Maintenance of Traffic, LS, and will include all materials and work necessary to construct, maintain, and remove the temporary traffic separator. Any damage to existing pavement caused by the removal of temporary traffic separator shall be satisfactorily repaired and the cost of such repairs are to be included in the cost of Maintenance of Traffic, LS.

TEMPORARY ASPHALT SEPARATOR

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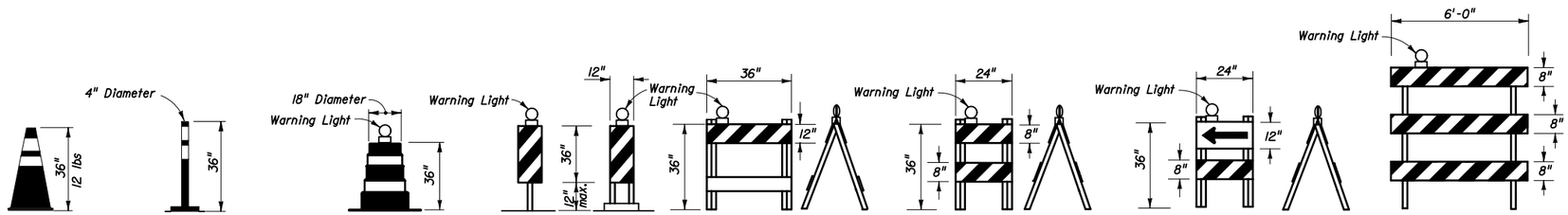

TUBULAR NON-FIXED MARKER TO BE USED DURING DAYLIGHT ONLY

POST MOUNT A-FRAME

CONES | TUBULAR MARKER | PLASTIC DRUMS | VERTICAL PANEL | TYPE I BARRICADE | TYPE II BARRICADE | DIRECTION INDICATOR BARRICADE | TYPE III BARRICADE

CHANNELIZING AND LIGHTING DEVICE NOTES

1. Only approved traffic control devices included on the Qualified Products List (QPL) may be used.
2. The FDOT approval number shall be engraved on the device at a convenient and readily visible location. Where engraving is not practical a water-resistant type label may be used.
3. The details shown on this sheet are for the following purposes: (a) For ease of identification and (b) To provide information that supplements or supersedes that provided by the MUTCD.
4. The Type III Barricade shall have a unit length of 6'-0" only. When barricades of greater lengths are required those lengths shall be in multiples of the 6'-0" unit. Signs used in conjunction with Type III Barricades may be mounted on or above the barricade. These signs should not cover more than 50 percent of the top two rails or 33 percent of the total area of the three rails.
5. During hours of darkness, warning lights shall be used on drums, vertical panels, Type I, Type II, Type III and direction indicator barricades in accordance with 'Warning Lights' in Index No. 600.
6. Ballast shall not be placed on top rails or any striped rails or higher than 13" above the driving surface.
7. The direction indicator barricade may be used in tapers and transitions where specific directional guidance to drivers is necessary. If used, direction indicator barricades shall be used in series to direct the driver through the transition and into the intended travel lane.
8. The splicing of sheeting is not permitted on either channelizing devices or MOT signs.
9. For rails less than 3'-0" long, 4" stripes shall be used.
10. Cones shall:
    a. Be used only in active work zones where workers are present.
    b. Not exceed 2 miles in length of use at any one time.
    c. Have as a minimum, one designated person for the purpose of continuous monitoring and maintenance of cones during lane closures.
    d. Be reflectorized as per the MUTCD with Department approved reflective collars when used at night.

IDENTIFICATIONS - CHANNELIZING AND LIGHTING DEVICES

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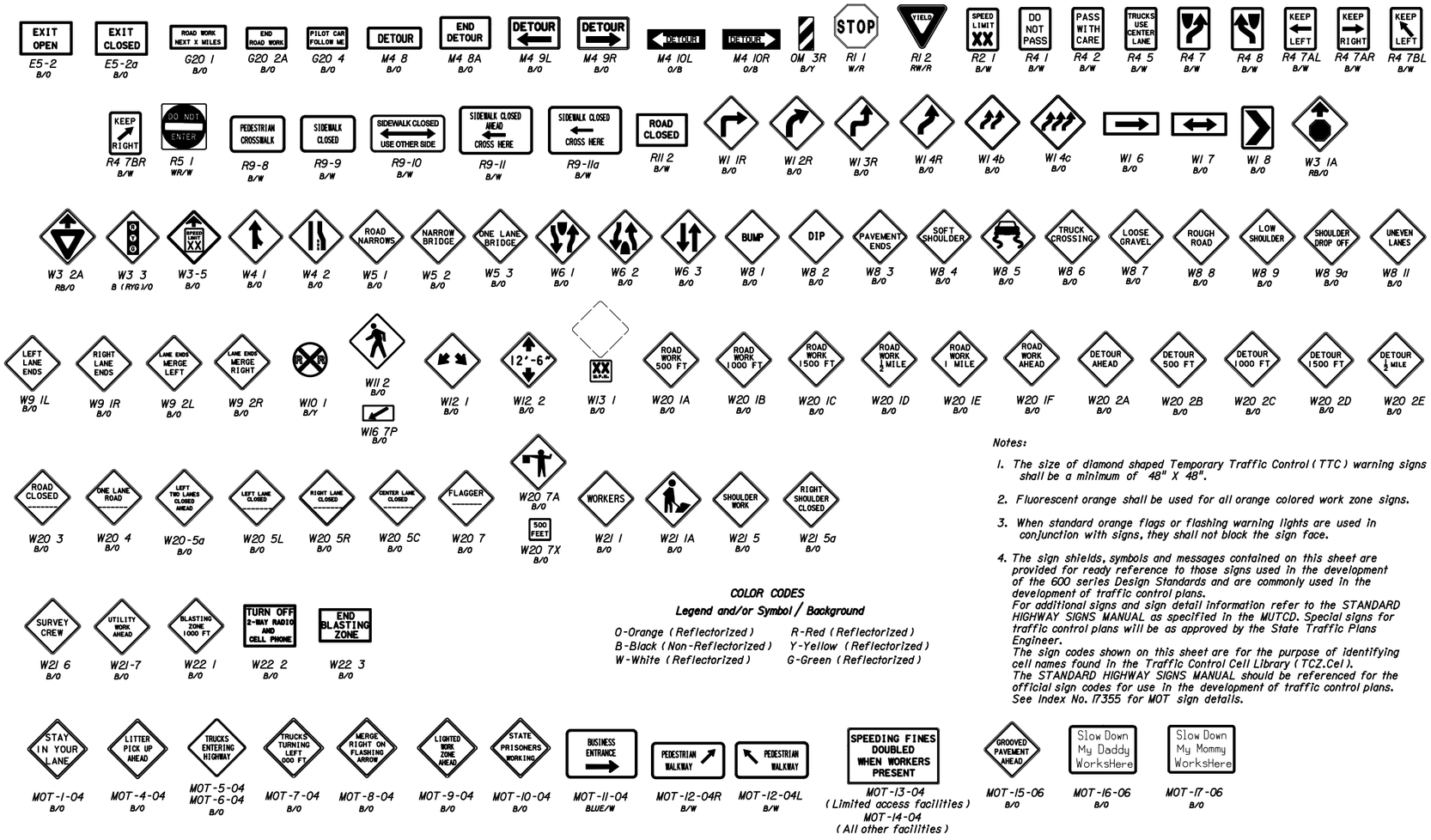
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	"CHANNELIZING AND LIGHTING DEVICE NOTES", note 10, delete note "c".



Notes:

1. *The size of diamond shaped Temporary Traffic Control (TTC) warning signs shall be a minimum of 48" X 48".*
2. *Fluorescent orange shall be used for all orange colored work zone signs.*
3. *When standard orange flags or flashing warning lights are used in conjunction with signs, they shall not block the sign face.*
4. *The sign shields, symbols and messages contained on this sheet are provided for ready reference to those signs used in the development of the 600 series Design Standards and are commonly used in the development of traffic control plans.*
   For additional signs and sign detail information refer to the STANDARD HIGHWAY SIGNS MANUAL as specified in the MUTCD. Special signs for traffic control plans will be as approved by the State Traffic Plans Engineer.
   The sign codes shown on this sheet are for the purpose of identifying cell names found in the Traffic Control Cell Library (TCZ.Cel).
   The STANDARD HIGHWAY SIGNS MANUAL should be referenced for the official sign codes for use in the development of traffic control plans.
   See Index No. 17355 for MOT sign details.

COLOR CODES

Legend and/or Symbol / Background

O-Orange (Reflectorized) R-Red (Reflectorized)
B-Black (Non-Reflectorized) Y-Yellow (Reflectorized)
W-White (Reflectorized) G-Green (Reflectorized)

COMMONLY USED WARNING AND REGULATORY SIGNS IN WORK ZONES

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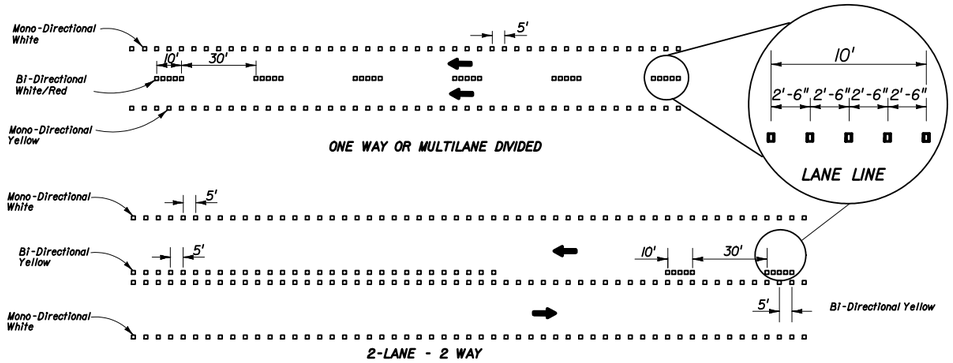


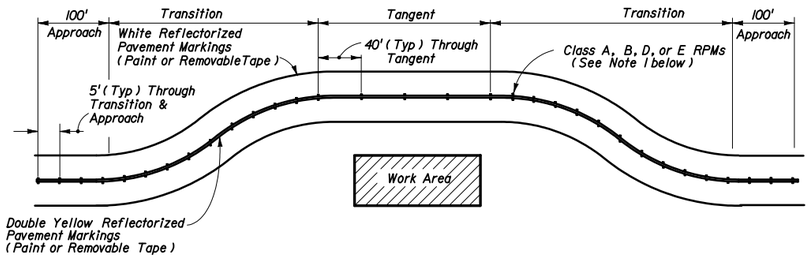
USE OF RPMS IN LIEU OF PAINT OR REMOVABLE TAPE IN WORK ZONES

1. In all transition areas paint or removable tape shall be used in addition to RPMs.
2. The color of the RPM body and the reflective face shall conform to the color of the marking for which they substitute.
3. In work zones, CLASS A, B or D RPMs may be used to form lane lines, edge lines and temporary gore areas, in lieu of paint or removable tape at the spacing shown above. Where the RPMs will be used for five (5) days or less, CLASS E RPMs may be used to form lane or edge lines.

RPM CLASS	APPLICATION FOR REFLECTIVE PAVEMENT MARKERS
A	Permanent Applications In Non-Traffic Areas Or Can Be Used In Work Zone Applications For Traffic And Non-Traffic Areas.
B	Permanent Application In Traffic And Non-Traffic Areas Or Can Be Used In Work Zone Applications For Traffic And Non-Traffic Areas.
D	Work Zone Application Only, For Traffic And Non-Traffic Areas.
E	Temporary Work Zone Application Only, Not Exceeding Five (5) Continuous Days, For Traffic And Non-Traffic Areas.

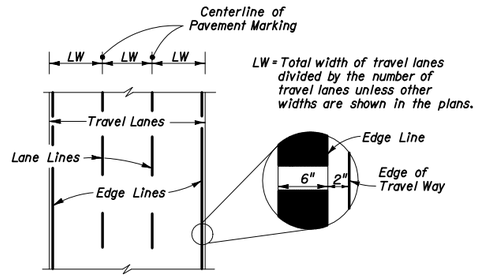
NOTES FOR REFLECTIVE PAVEMENT MARKERS

1. The color of the raised pavement marker under both day and night conditions shall conform to the color of the marking for which they serve as a positioning guide, or for which they supplement or substitute.
2. To provide contrast on concrete pavement, or light asphalt, the five (5) white RPMs shall be followed by five black RPMs. The spacing between RPMs shall be 2'-6". Black RPMs will not be required for contrast with yellow RPMs.
3. It shall be the contractors responsibility to replace damaged or missing RPMs.
4. RPMs used to supplement lane lines are to be paid for as Reflective Pavement Marker (Temporary), EA. RPMs used in lieu of paint or removable tape are to be paid for as Reflective Pavement Marker (Temporary), EA.



USE OF RPMS TO SUPPLEMENT PAINT OR REMOVABLE TAPE IN WORK ZONES

1. RPMs shall be installed as a supplement to all lane lines and the edge lines of gore areas during construction. Placement of RPMs should be as shown in Index No. 17352 with the following exceptions:
   RPMs shall be placed at 5 feet center to center in approach and transition areas.
   Class D markers be placed at a maximum spacing of 5 feet center to center.



PLACEMENT OF PAVEMENT MARKINGS

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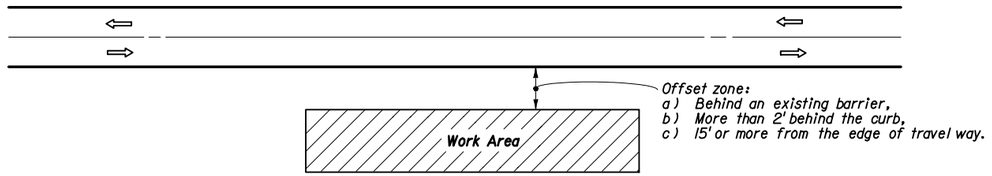


GENERAL NOTES

1. If the work operation (excluding establishing and terminating the work area) requires that two or more work vehicles cross the offset zone in any one hour, traffic control will be in conformance with Index No. 602.
2. No special signing is required.
3. When a side road intersects the highway within the work area, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
4. When construction activities encroach on a sidewalk refer to Index No. 660.
5. For general TCZ requirements and additional information refer to Index No. 600.

SYMBOLS

Work Area

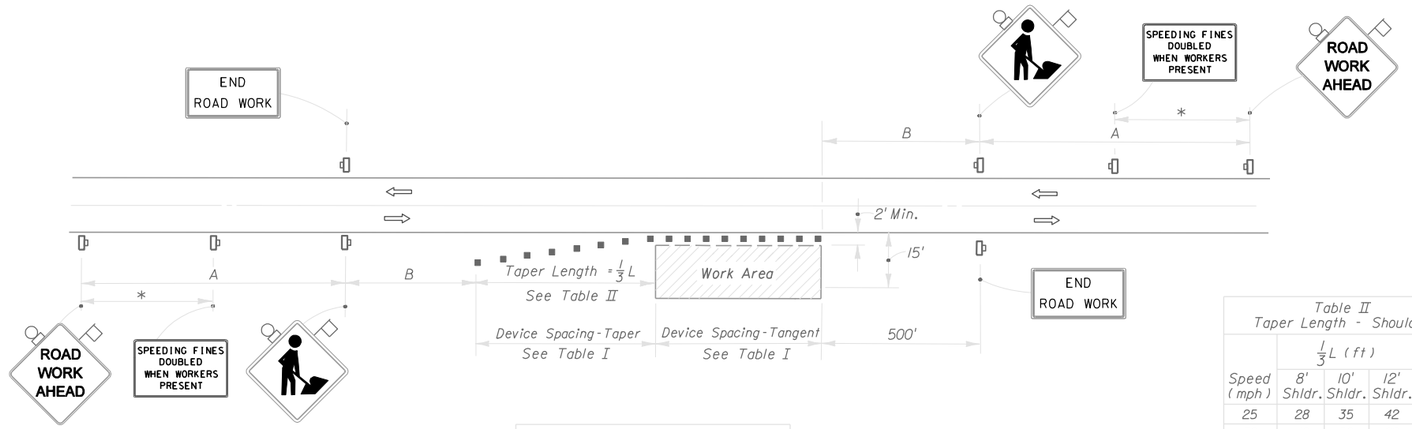
Lane Identification + Direction of Traffic

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS AND THEIR ACTIVITIES ARE BEHIND AN EXISTING BARRIER, MORE THAN 2' BEHIND THE CURB, OR 15' OR MORE FROM THE EDGE OF TRAVEL WAY

2006 FDOT Design Standards	Last Revision	Sheet No.
TWO-LANE TWO-WAY, WORK OUTSIDE SHOULDER	07/01/05	1 of 1
	Index No. 601	

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



DISTANCE BETWEEN SIGNS		
Speed	Spacing (ft)	
	A	B
40 mph or less	200	200
45 mph	350	350
50 mph or greater	500	500

* 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II
Taper Length - Shoulder

Speed (mph)	1/3 L (ft)			Notes
	8' Shldr.	10' Shldr.	12' Shldr.	
25	28	35	42	$L = \frac{WS^2}{60}$
30	40	50	60	
35	55	68	82	
40	72	90	107	
45	120	150	180	L = WS
50	133	167	200	
55	147	183	220	
60	160	200	240	
65	173	217	260	
70	187	233	280	

8' minimum shoulder width.

1/3 L = Length of shoulder taper in feet

W = Width of total shoulder in feet (combined paved and unpaved width)

S = Posted speed limit (mph)

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. All vehicles, equipment, workers (except flaggers), and their activities are restricted to one side of the roadway.
2. When four or more work vehicles enter the through traffic lanes in a one hour period or less (excluding establishing and terminating the work area), the advanced FLAGGER sign shall be substituted for the WORKERS sign. For location of flaggers and FLAGGER signs, see Index No. 603.
3. WORKERS sign to be removed or fully covered when no work is being performed.
4. SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign only on the side where the shoulder work is being performed.
5. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
6. For general TCZ requirements and additional information refer to Index No. 600.

DURATION NOTES

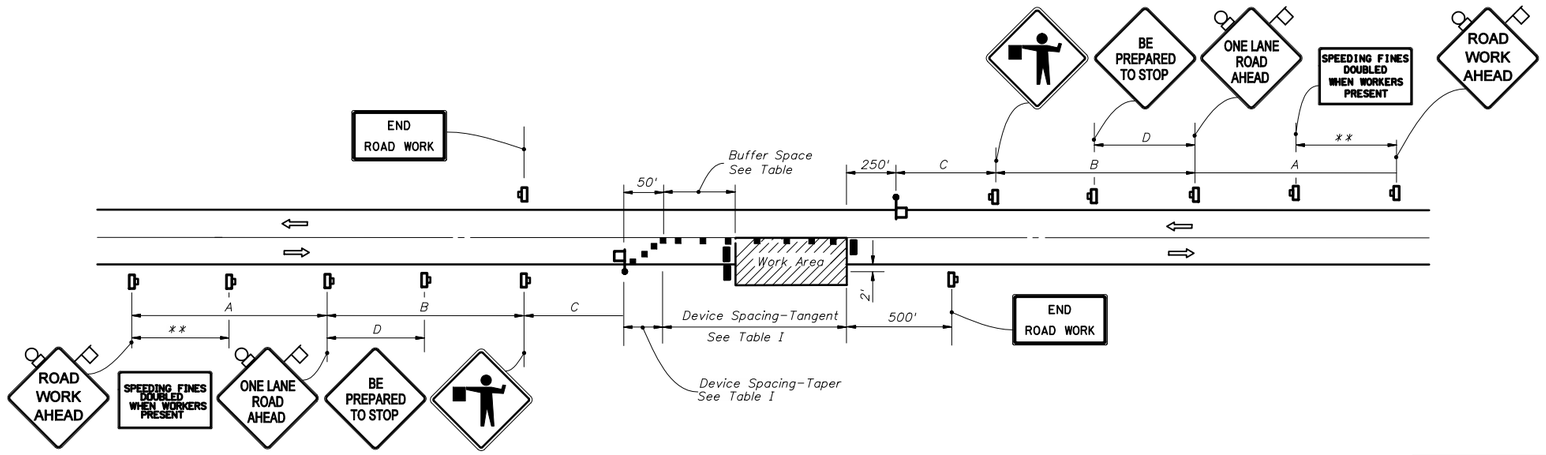
1. Signs and channelizing devices may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA CLOSER THAN 15' BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVEL WAY.

##STANDARD YEAR##	#Label1# #Label2# 07/01/05	Sheet No. 1 of 1
TWO-LANE TWO-WAY, WORK ON SHOULDER		Index No. 602

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	"GENERAL NOTES"-Note 1 is deleted. DURATION NOTES", add note "2. Signs, except for the ROAD WORK AHEAD sign, may be omitted from the opposite side of the shoulder work if all the following conditions are met: a) work operations are less than a day. b) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.



DISTANCE BETWEEN SIGNS				
Speed (mph)	Spacing (ft)			
	A	B	C	D
40 or less	200	200	200	100
45	350	350	350	175
50	500	500	500	250
55 or greater	2640	1640	1000	500

* The ROAD WORK 1 MILE sign may be used as an alternate to the ROAD WORK AHEAD sign.

** 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

*** BE PREPARED TO STOP sign may be omitted for speeds of 45 MPH or less.

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Flagger
- Automated Flagger Assistance Devices (AFAD), With Gate
- Lane Identification + Direction of Traffic

TABLE I DEVICE SPACING				
Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25 to 45	20	50	20	50
50 to 70	20	50	20	100

GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the opposite lane open to traffic.
2. All vehicles, equipment, workers (except flaggers), and their activities are restricted to one side of the roadway.
3. Additional one-way control may be effected by the following means:
   (1) Flag-carrying vehicle; (2) Official vehicle;
   (3) Pilot vehicles; (4) Traffic signals.

   When flaggers are the sole means of one-way control the flaggers shall be in sight of each other or in direct communication at all times.
4. The ONE-LANE ROAD signs are to be fully covered and the FLAGGER signs either removed or fully covered when no work is being performed and the highway is open to two-way traffic.
5. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
6. The two channelizing devices directly in front of the work area and the one channelizing device directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
7. For general TCZ requirements and additional information, refer to Index No. 600.

DURATION NOTES

1. ROAD WORK AHEAD and the BE PREPARED TO STOP signs may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed limit is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space.
   d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.

BUFFER SPACE	
Speed (mph)	Dist. (ft)
25	155
30	200
35	250
40	305
45	360
50	425
55	495
60	570
65	645
70	730

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA BETWEEN THE CENTERLINE AND A LINE 2' OUTSIDE THE EDGE OF TRAVEL WAY.

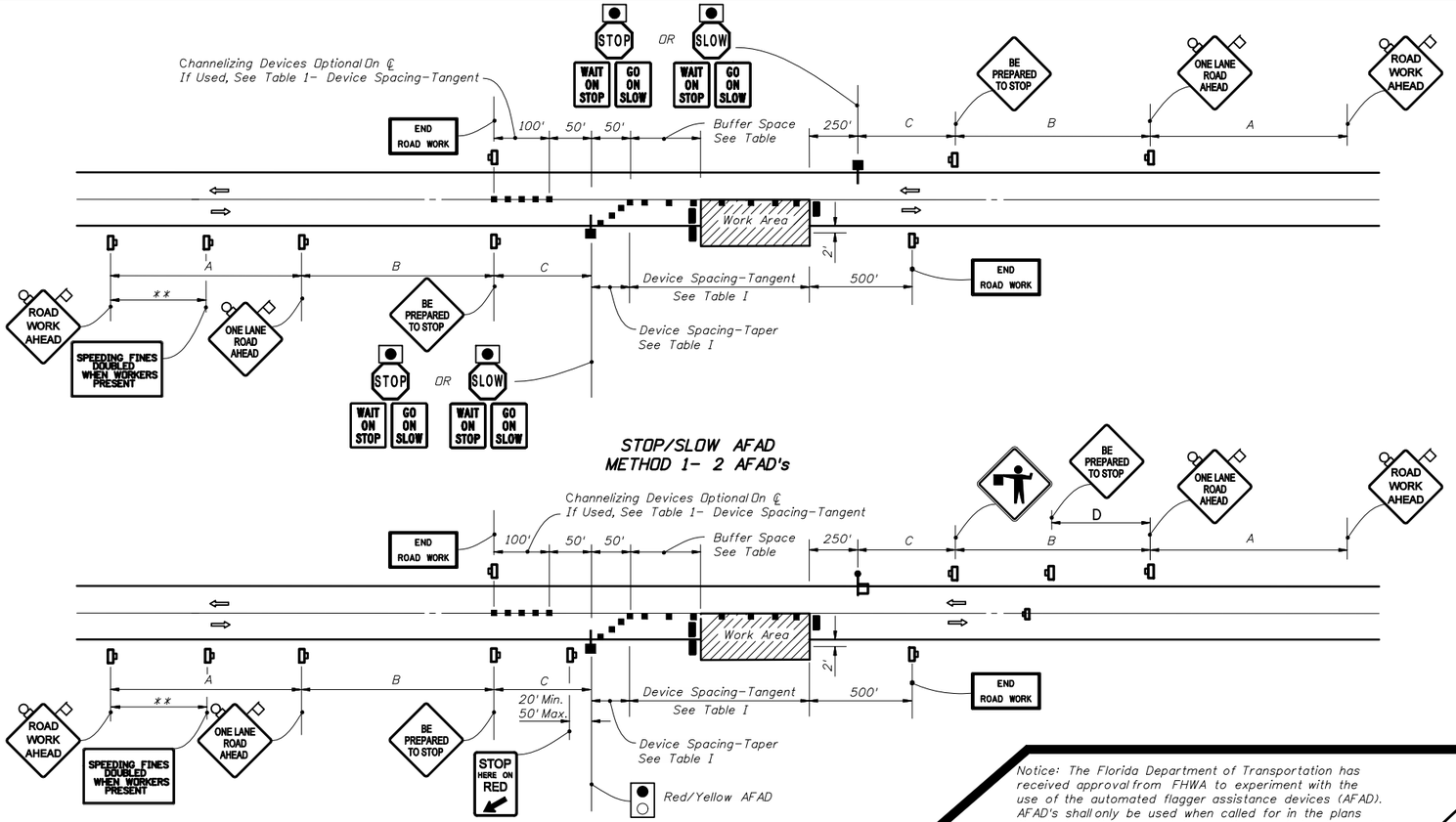
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
06/27/06	CA	Added symbol for Automated Flagger Assistance Device (AFAD) to sheet 1. Added new sheet 2 with details for Automated Flagger Assistance Device.			

2006 FDOT Design Standards

TWO-LANE TWO-WAY, WORK WITHIN THE TRAVEL WAY

Last Revision 07/01/06 | Sheet No. 1 of 2 | Index No. 603

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	"TWO-LANE, TWO-WAY, WORK WITHIN THE TRAVEL WAY" is deleted and Interim Index No. 603 (Sheet 1 of 2), Dated 07-01-06, is substituted and (Sheet 2 of 2) is added.
07/01/07	"GENERAL NOTES"-Note 2 is deleted.



DISTANCE BETWEEN SIGNS				
Speed (mph)	Spacing (ft)			
	A	B	C	D
40 or less	200	200	200	100
45	350	350	350	175
50	500	500	500	250
55 or greater	2640	1640	1000	500

* (See Sheet 1 Notes)
** (See Sheet 1 Notes)

Notice: The Florida Department of Transportation has received approval from FHWA to experiment with the use of the automated flagger assistance devices (AFAD). AFAD's shall only be used when called for in the plans that include the appropriate pay item and developmental specification or approved by the State Roadway Design Office.

AUTOMATED FLAGGER ASSISTANCE DEVICES (AFAD)

1. When used at nightime, the AFAD flagging station shall be illunimated.
2. When the AFAD is not in use, it shall be moved outside the clear zone or be shielded by a barrier or crash cushion and the signs associated with the AFAD shall be removed or covered.
3. Duration Notes show on sheet 1 of 2 do not apply when AFAD are used.

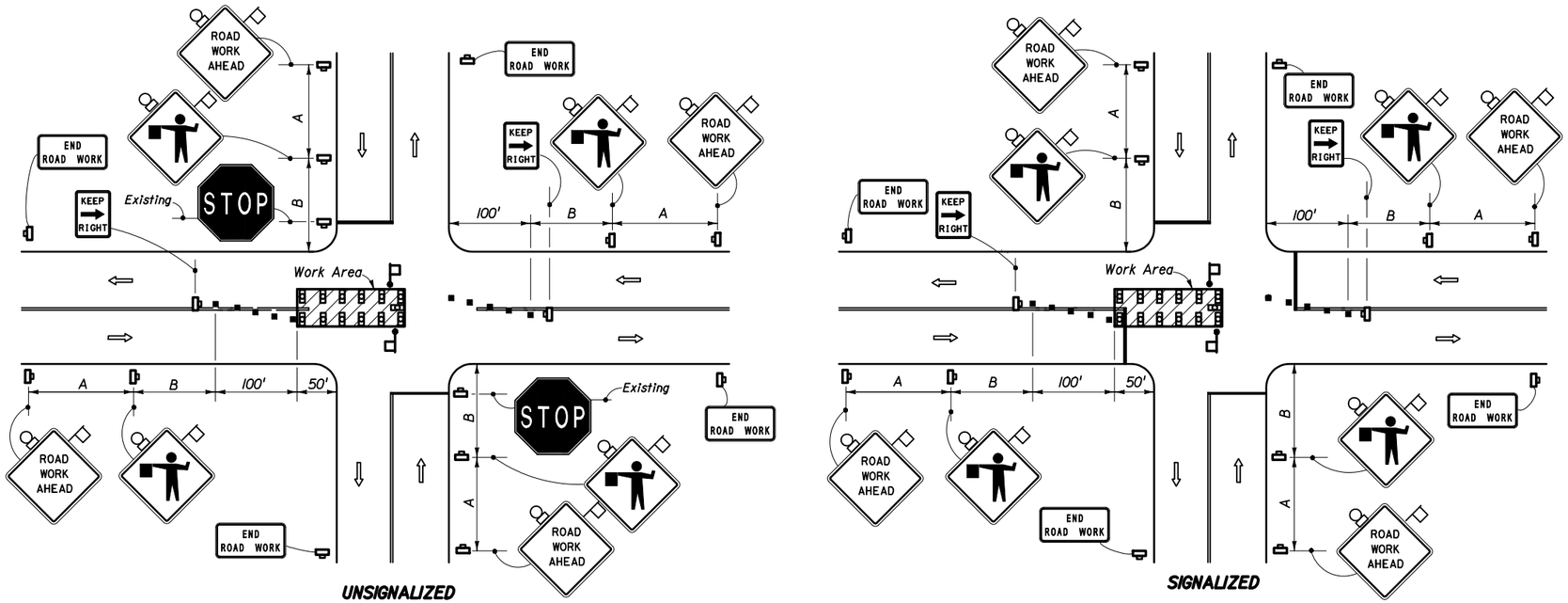
REVISIONS					
DATE	BY	DESCRIPTION	DATE	BY	DESCRIPTION
06/27/06	CA	New sheet 2 with details for Automated Flagger Assistance Device (AFAD).			

2006 Interim Design Standard

TWO-LANE TWO-WAY, WORK WITHIN THE TRAVEL WAY

Interim Date 07/01/06 | Sheet No. 2 of 2 | Index No. 603

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
01/01/07	New Sheet.



SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only).
  (Tubular Markers May Be Used During Daylight Only. Cones May Be Used - See Index No. 600.)
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Flagger
- Stop Bar
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. All vehicles, equipment, workers (except flaggers) and their activities are forbidden in lane and intersection areas reserved for traffic.
2. The FLAGGER legend sign may be substituted for the symbol sign.
3. When vehicles in a parking zone block the line of sight to TCZ signs, the signs shall be post mounted and located in accordance with Index No. 17302.
4. If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index No. 660.
5. Flaggers shall be located where they can control more than one direction of traffic.

   Flaggers shall be in sight of each other or in direct communication at all times.
6. Maximum spacing between channelizing devices shall be not greater than 20'.
7. Temporary signal phasing modifications are to be approved by the District Traffic Operations Engineer prior to the beginning of work.
8. For general TCZ requirements and additional information refer to Index No. 600.

DURATION NOTES

1. ROAD WORK AHEAD AND END ROAD WORK sign may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to A plus B
   d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.

DISTANCE BETWEEN SIGNS		
Speed	Spacing (ft)	
	A	B
40 mph or less	200	200
45 mph	350	350

CONDITIONS

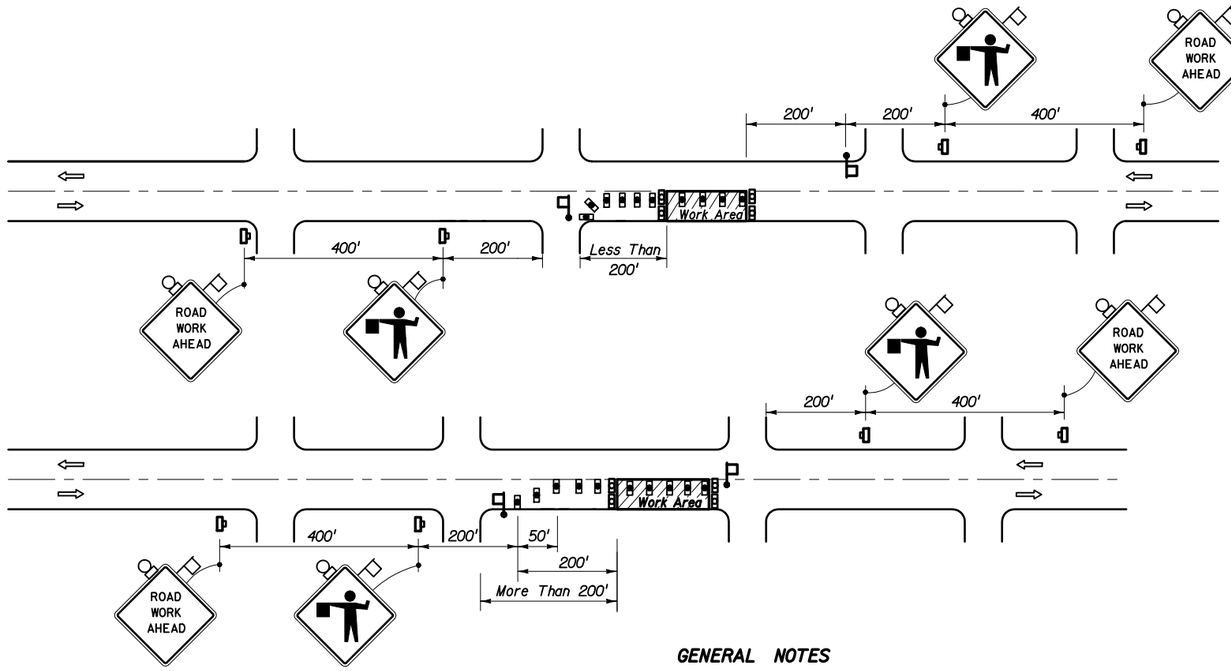
WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF A PORTION OF ONE OR MORE TRAFFIC LANES IN AN INTERSECTION.

2006 FDOT Design Standards

TWO-LANE TWO-WAY, WORK IN INTERSECTION

Last Revision 07/01/05 | Sheet No. 1 of 1 | Index No. 604

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	"GENERAL NOTES"-Note 1 is deleted.



CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF ONE TRAFFIC LANE, FOR WORK AREAS LESS THAN 200' DOWNSTREAM FROM AN INTERSECTION FOR A PERIOD OF MORE THAN 60 MINUTES.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF ONE TRAFFIC LANE, FOR WORK AREAS 200' OR MORE DOWNSTREAM FROM AN INTERSECTION FOR A PERIOD OF MORE THAN 60 MINUTES.

GENERAL NOTES

1. Work operations shall be confined to one travel lane, leaving the opposing travel lane open to traffic.
2. All vehicles, equipment, workers (except flaggers) and their activities are restricted to one side of the roadway.
3. When vehicles in a parking zone block the line of sight to TCZ signs or when TCZ signs encroach on a normal pedestrian walkway, the signs shall be post mounted and located in accordance with Index No. 17302.
4. If work area is confined to an outside auxiliary lane the work area shall be barricaded and the FLAGGER signs replaced by ROAD WORK AHEAD signs. Flaggers are not required.
5. Flaggers shall be in sight of each other or in direct communication at all times.
6. The FLAGGER legend sign may be substituted for the symbol sign.
7. The maximum spacing between devices shall be no greater than 25.'
8. For general TCZ requirements and additional information refer to Index No. 600.
9. The two channelizing devices directly in front and directly at the end of the work area is occupied only by a vehicle with activated high-intensity rotating, flashing, oscillating, or strobe lights.

SYMBOLS

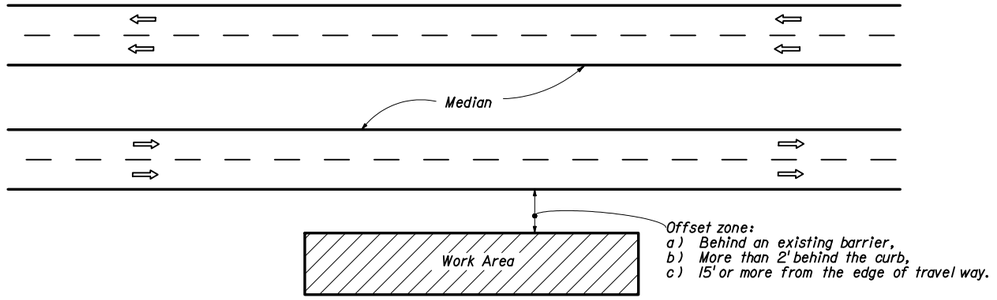
- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only).
  (Tubular Markers May Be Used During Daylight Only. Cones May Be Used - See Index No. 600.)
- Type I Or Type II Barricade Or Vertical Panel Or Drum (with Flashing Light At Night Only)
- Work Zone Sign
- Flagger
- Lane Identification + Direction of Traffic

TYPICAL APPLICATIONS

Utility Work
Pavement Repair
Structure Adjustments

2006 FDOT Design Standards	Last Revision	Sheet No.
TWO-LANE TWO-WAY, WORK NEAR INTERSECTION	07/01/05	1of 1
	Index No.	605

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	"GENERAL NOTES"-Note 2 is deleted.



GENERAL NOTES

1. If the work operation (excluding establishing and terminating the work area) requires that two or more work vehicles cross the offset zone in any one hour, traffic control will be in accordance with Index No. 612.
2. No special signing is required.
3. This index also applies when work is being performed on a multilane undivided highway.
4. This index also applies to work performed in the median behind an existing barrier or more than 15' from the edge of travel way, both roadways. Work performed in the median behind curb and gutter shall be in accordance with Index No. 612.
5. When a side road intersects the highway within the work area, additional traffic control devices shall be placed in accordance with other applicable TCZ Indexes.
6. When construction activities encroach on a sidewalk refer to Index No. 660.
7. For general TCZ requirements and additional information refer to Index No. 600.

SYMBOLS

Work Area

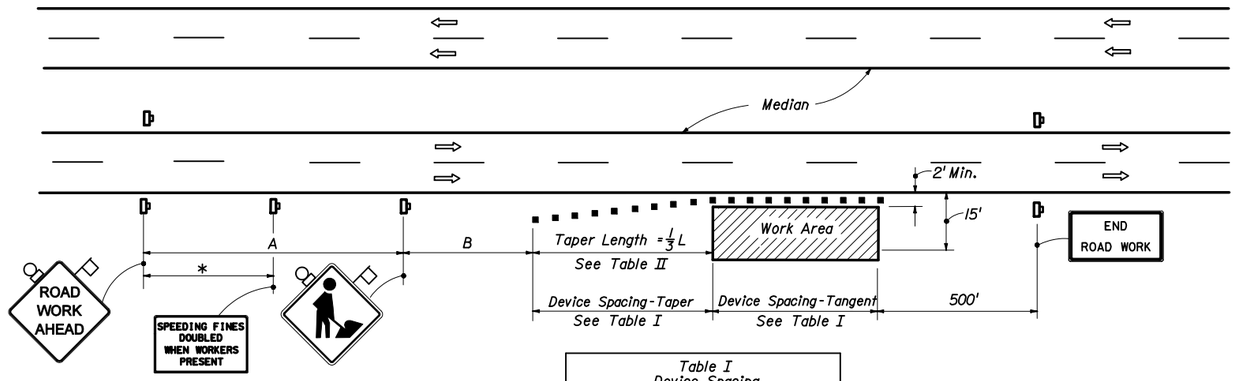
Lane Identification + Direction of Traffic

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS AND THEIR ACTIVITIES ARE BEHIND AN EXISTING BARRIER, MORE THAN 2' BEHIND THE CURB, OR 15' OR MORE FROM THE EDGE OF TRAVEL WAY

2006 FDOT Design Standards	Last Revision 07/01/05	Sheet No. 1 of 1
MULTILANE, WORK OUTSIDE SHOULDER		Index No. 611

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



DISTANCE BETWEEN SIGNS		
Speed	Spacing (ft)	
	A	B
40 mph or less	200	200
45 mph	350	350
50 mph or greater	500	500

* 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II
Taper Length - Shoulder

Speed (mph)	1/3 L (ft)			Notes
	8' Shldr.	10' Shldr.	12' Shldr.	
25	28	35	42	$L=\frac{WS^2}{60}$
30	40	50	60	
35	55	68	82	
40	72	90	107	
45	120	150	180	L=WS
50	133	167	200	
55	147	183	220	
60	160	200	240	
65	173	217	260	
70	187	233	280	

8' minimum shoulder width.

1/3 L = Length of shoulder taper in feet

W = Width of total shoulder in feet (combined paved and unpaved width)

S = Posted speed limit (mph)

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. All vehicles, equipment, workers, and their activities are restricted to one side of the roadway.
2. If the work operation encroaches on the through traffic lanes or when four or more work vehicles enter the through traffic lanes in a one hour period (excluding establishing and terminating the work area) a flagger shall be provided and a FLAGGER sign shall be substituted for the WORKERS sign. The flagger shall be positioned at the point of vehicle entry or departure from the work area.
3. This TCZ plan also applies to work performed in the median more than 2' but less than 15' from the edge of travelway.
4. When work is being performed on a multilane undivided roadway the signs normally mounted in the median (as shown) shall be omitted.
5. WORKERS signs to be removed or fully covered when no work is being performed.
6. SHOULDER WORK sign may be used as an alternate to the WORKER symbol sign.
7. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
8. For general TCZ requirements and additional information refer to Index No. 600.

DURATION NOTES

1. Signs and channelizing devices may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA CLOSER THAN 15' BUT NOT CLOSER THAN 2' TO THE EDGE OF TRAVEL WAY.

2006 FDOT Design Standards

MULTILANE, WORK ON SHOULDER

Last Revision 07/01/05 | Sheet No. 1 of 1 | Index No. 612

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	"GENERAL NOTES" - Note 1 is deleted.

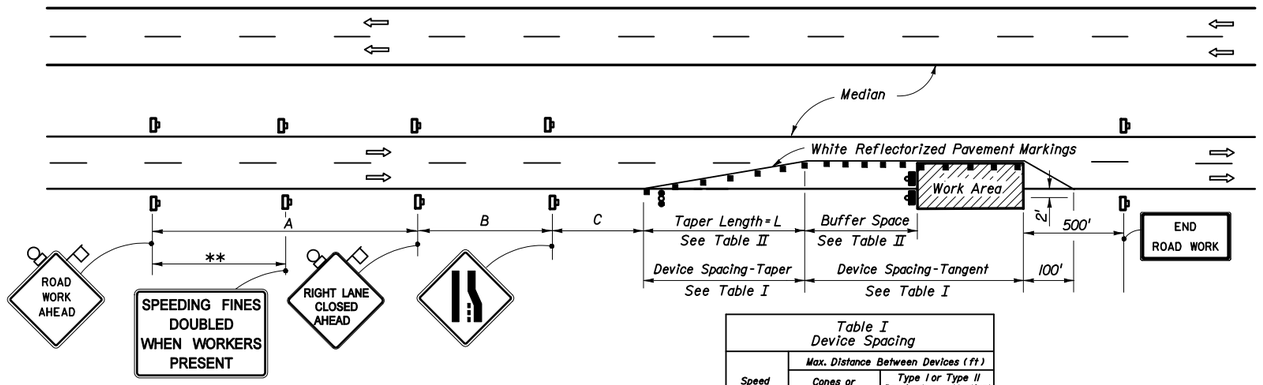


Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50
50 to 70	25	50	50	100

Table II
Buffer Space and Taper Length

Speed (mph)	Buffer Space	Taper Length (12' Lateral Transition)	
	Dist. (ft)	L (ft)	Notes (Merge)
25	155	125	$L = \frac{WS^2}{60}$
30	200	180	
35	250	245	
40	305	320	
45	360	540	L = WS
50	425	600	
55	495	660	
60	570	720	
65	645	780	
70	730	840	

When Buffer Space cannot be attained due to geometric constraints, the greatest attainable length shall be used, but not less than 200 ft.

For lateral transitions other than 12', use formula for L shown in the notes column.
Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350
50 mph	500	500	500
*55 mph or greater	2640	1640	1000

* The ROAD WORK 1 MILE sign may be used as an alternate to the ROAD WORK AHEAD sign and the RIGHT LANE CLOSED ½ MILE sign may be used as an alternate to the RIGHT LANE CLOSED AHEAD sign.

** 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

SYMBOLS

- Work Area
- Sign With 18"x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum (With Flashing Light)
- Work Zone Sign
- Advance Warning Arrow Panel

GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the adjacent lane open to traffic.
2. All vehicles, equipment, workers, and their activities are restricted to one side of the roadway.
3. On undivided highways the median signs as shown are to be omitted.
4. When work is performed in the median lane on divided highways the channelizing device plan is inverted and left lane closed and lane ends signs substituted for the right lane closed and lane end signs.

   The same applies to undivided highways with the following exceptions:
   (a) Work shall be confined within one median lane.
   (b) Additional barricades, cones, or drums shall be placed along the centerline abutting the work area and across the trailing end of the work area.

   When work on undivided highways occurs across the centerline so as to encroach on both median lanes, the inverted plan is applied to the approach of both roadways.
5. Signs and traffic control devices are to be modified in accordance with INTERMITTENT WORK STOPPAGE details (sheet 2 of 2) when no work is being performed and the highway is open to traffic.
6. The two channelizing devices directly in front of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
7. When paved shoulders having a width of 8 ft. or more are closed, channelizing devices shall be used to close the shoulder in advance of the merging taper to direct vehicular traffic to remain within the travel way. See Index No. 612 for shoulder taper formulas.
8. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
9. This TCZ plan does not apply when work is being performed in the middle lane(s) of a six or more lane highway. See Index No. 614.
10. For general TCZ requirements and additional information refer to Index No. 600.

DURATION NOTES

1. Temporary white edgeline may be omitted for work operations less than 3 days.
2. Signs, arrow panel and buffer space may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed limit is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space and the taper length combined.
   d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.

CONDITIONS

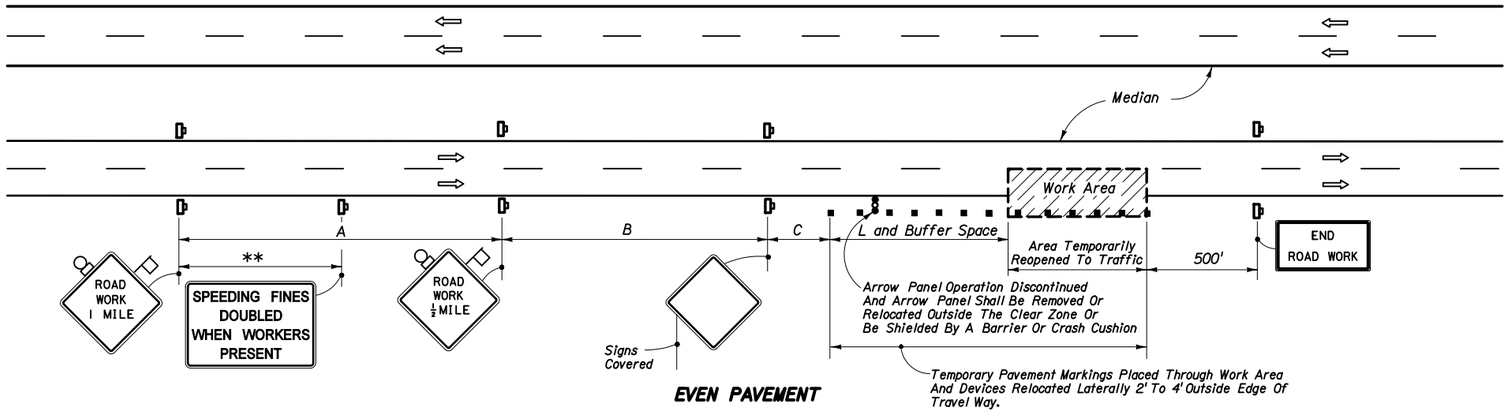
WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE LANE ADJACENT TO EITHER SHOULDER AND THE AREA 2' OUTSIDE THE EDGE OF TRAVEL WAY.

2008 FDOT Design Standards

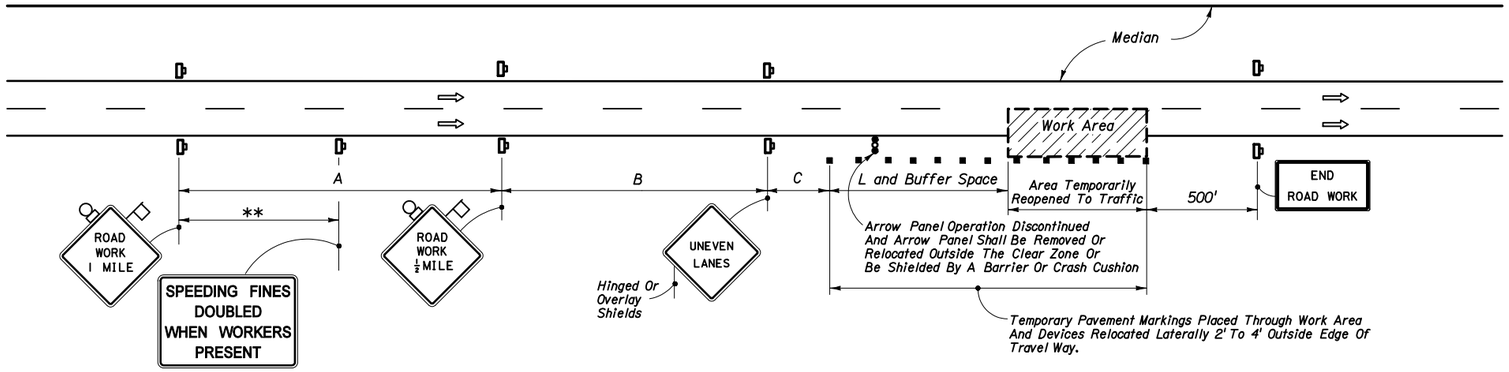
MULTILANE, WORK WITHIN THE TRAVEL WAY MEDIAN OR OUTSIDE LANE

Last Revision 07/01/05 | Sheet No. 1 of 2 | Index No. 613

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	"GENERAL NOTES"-Note 2 is deleted.



EVEN PAVEMENT

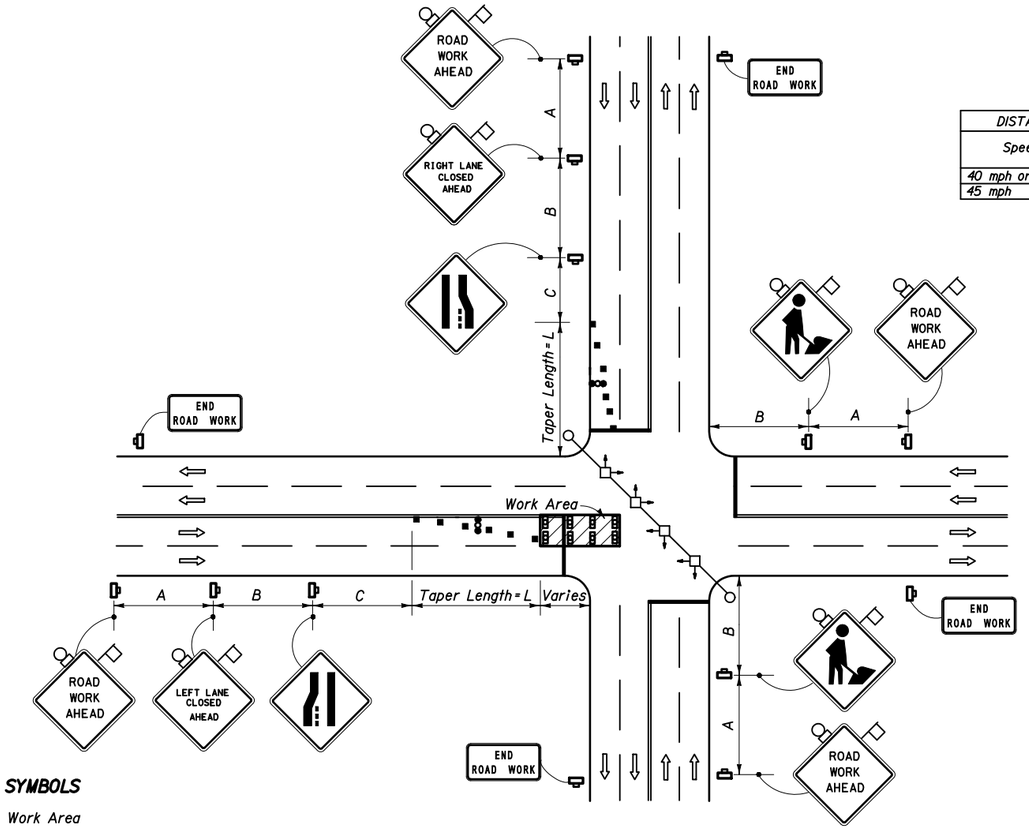


UNEVEN PAVEMENT

INTERMITTENT WORK STOPPAGE - LANE REOPENED TO TRAFFIC

2006 FDOT Design Standards	Last Revision 07/01/05	Sheet No. 2 of 2
MULTILANE, WORK WITHIN THE TRAVEL WAY MEDIAN OR OUTSIDE LANE		Index No. 613

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



SIGNALIZED

DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350

Table II Taper Length - Merge (12' Lateral Transition)		
Speed (mph)	L (ft)	Notes (Merge)
25	125	$L = \frac{WS^2}{60}$
30	180	
35	245	
40	320	
45	540	L = WS

For lateral transitions other than 12', use formula for L shown in the notes column. Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

GENERAL NOTES

1. All vehicles, equipment, workers (except flaggers) and their activities are forbidden in lane and intersection areas reserved for traffic.
2. The WORKERS legend sign may be substituted for the symbol sign.
3. When vehicles in a parking zone block the line of sight to TCZ signs, the signs shall be post mounted and located in accordance with Index No. 17302.
4. If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index No. 660.
5. Dual signs are required for divided roadways.
6. Maximum spacing between barricades, vertical panels, cones, tubular markers and drums shall not be greater than 25'.
7. Temporary signal phasing modifications are to be approved by the District Traffic Operations Engineer prior to the beginning of work.
8. For general TCZ requirements and additional information refer to Index No. 600.

DURATION NOTES

1. Signs and arrow panel may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to twice the taper length.
   d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Channelizing Device (See Index No. 600)
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Flashing Light At Night Only)
- Work Zone Sign
- Stop Bar
- Advance Warning Arrow Panel
- Lane Identification + Direction of Traffic

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH ON THE PAVEMENT REQUIRING THE CLOSURE OF AT LEAST ONE MEDIAN TRAFFIC LANE.

2006 FDOT Design Standards

MULTILANE, WORK IN INTERSECTION

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DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	"GENERAL NOTES"-Note 1 is deleted.

GENERAL NOTES

1. All vehicles, equipment, workers (except flaggers) and their activities are restricted to one side of the roadway.

2. Work operations shall be confined to either one lane or lane combinations as follows:
   (a) Outside travel lane; (b) Outside auxiliary lane;
   (c) Outside travel lane and adjoining auxiliary lane;
   (d) Inside travel lane△; (e) Inside auxiliary lane△;
   (f) Inside travel lane and adjoining auxiliary lane△;
   △ See Sheet 3 of 3

   If the work area is confined to an auxiliary lane the work area shall be barricaded and the RIGHT (LEFT) LANE CLOSED AHEAD signs replaced by ROAD WORK AHEAD signs, and the merge symbol signs eliminated.

3. When vehicles in a parking zone block the line of sight to TCZ signs the signs shall be post mounted and located in accordance with Index No. 17302.

4. If the work space extends across a crosswalk, the crosswalk should be closed using the information in Index No. 660.

5. Signs are required on the median side for divided highways.

6. The two channelizing devices directly in front and directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.

7. For general TCZ requirements and additional information refer to Index No. 600.

DURATION NOTES

1. Signs and arrow panel may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed limit is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to twice the taper length.
   d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Work Zone Sign
- Advance Warning Arrow Panel
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Flashing Light At Night Only)
- Type III Barricade
- Channelizing Device (See Index No. 600)
- Lane Identification + Direction of Traffic

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MULTILANE, WORK NEAR INTERSECTION MEDIAN OR OUTSIDE LANE

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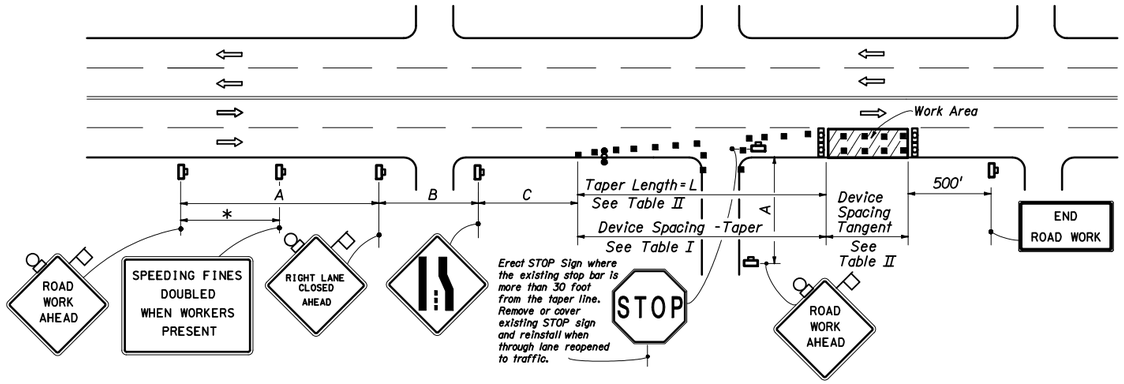
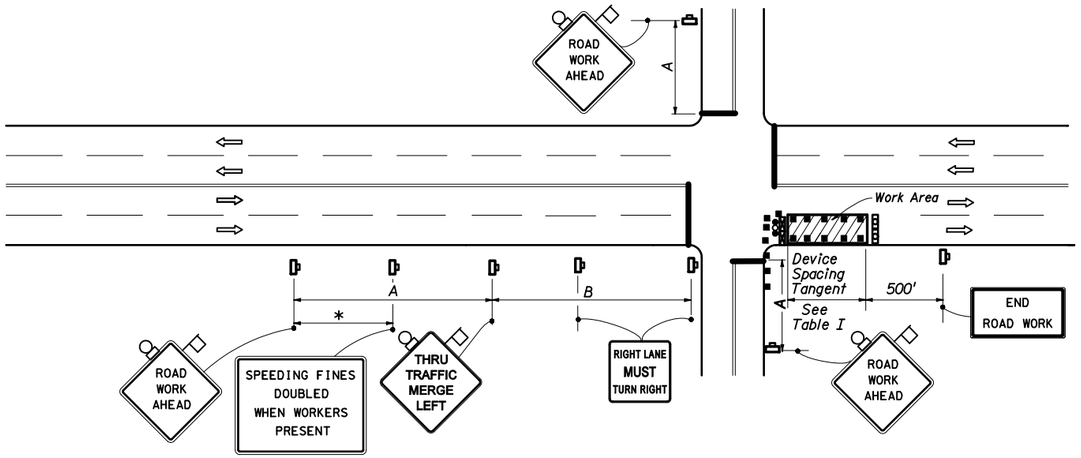
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	"GENERAL NOTES"-Note 1 is deleted.



RIGHT LANE CLOSED ON FAR SIDE OF MINOR SIDESTREET



RIGHT LANE CLOSED ON FAR SIDE OF INTERSECTION WITH SIGNIFICANT RIGHT TURNING MOVEMENTS

DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350

* 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50

Table II
Taper Length - Merge
(12' Lateral Transition)

Speed (mph)	L (ft)	Notes (Merge)
25	125	
30	180	$L = \frac{WS^2}{60}$
35	245	
40	320	
45	540	$L = WS$

For lateral transitions other than 12', use formula for L shown in the notes column. Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

1. The normal procedure is to close on the near side of the intersection any lane that is not carried through the intersection. However, when this results in the closure of a right lane having significant right turning movements, then the right lane may be restricted to right turns only as shown in this detail.

2. For intersection approaches reduced to a single lane, left turning movements may be prohibited to maintain capacity for through vehicular traffic.

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MULTILANE, WORK NEAR INTERSECTION MEDIAN OR OUTSIDE LANE	07/01/05	2 of 3
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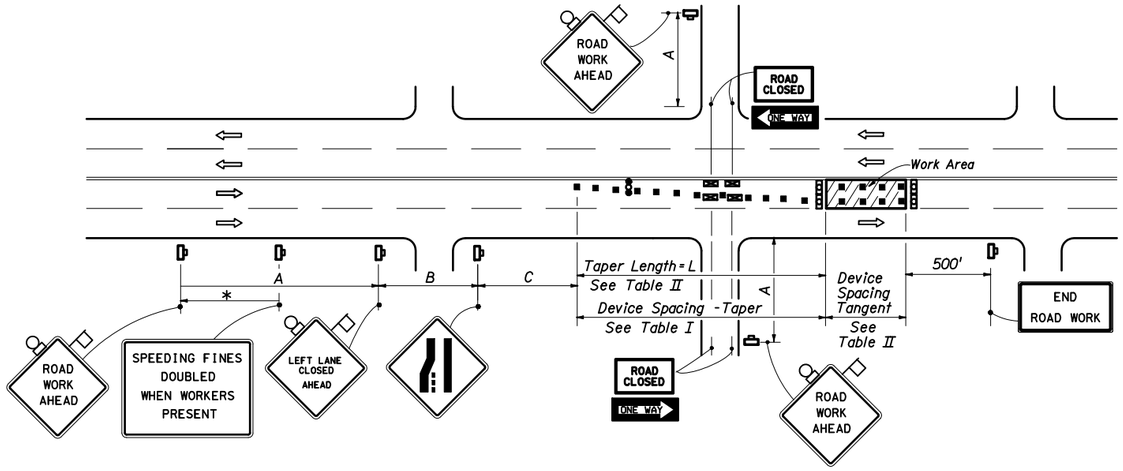
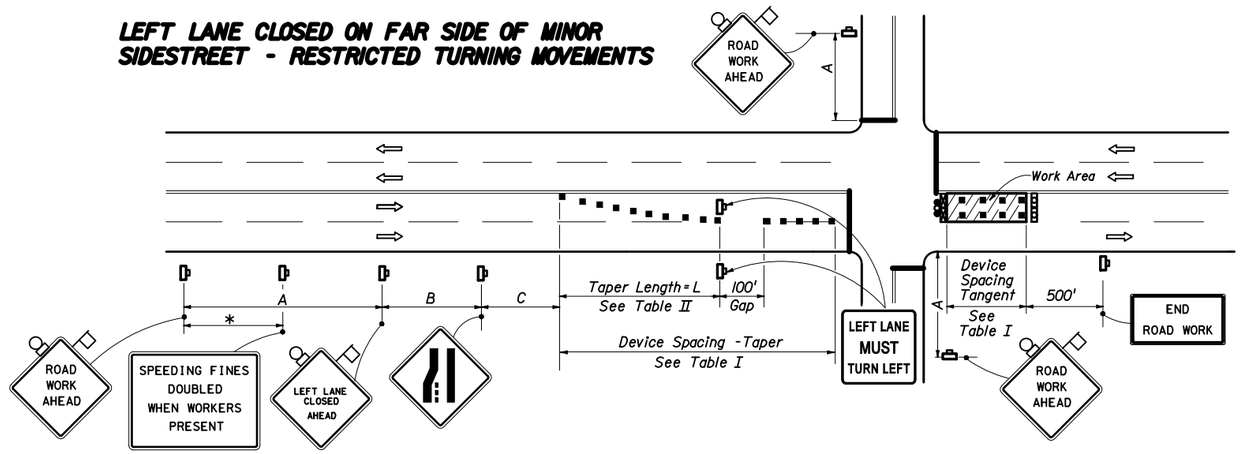
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS



LEFT LANE CLOSED ON FAR SIDE OF MINOR SIDESTREET - RESTRICTED TURNING MOVEMENTS



LEFT LANE CLOSED ON FAR SIDE OF INTERSECTION TURNING MOVEMENTS ALLOWED

1. The normal procedure is to close on the near side of the intersection any lane that is not carried through the intersection. However, when this results in the closure of a left lane having significant right turning movements, then the left lane may be reopened as a turn bay for left turns only as show in this detail.

DISTANCE BETWEEN SIGNS			
Speed	Spacing (ft)		
	A	B	C
40 mph or less	200	200	200
45 mph	350	350	350

* 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

Table I Device Spacing				
Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25	25	50	25	50
30 to 45	25	50	30	50

Table II Taper Length - Merge (12' Lateral Transition)		
Speed (mph)	L (ft)	Notes (Merge)
25	125	$L = \frac{WS^2}{60}$
30	180	
35	245	
40	320	
45	540	L = WS

For lateral transitions other than 12', use formula for L shown in the notes column. Where:
L = Length of taper in feet
W = Width of lateral transition in feet
S = Posted speed limit (mph)

2006 FDOT Design Standards

MULTILANE, WORK NEAR INTERSECTION MEDIAN OR OUTSIDE LANE

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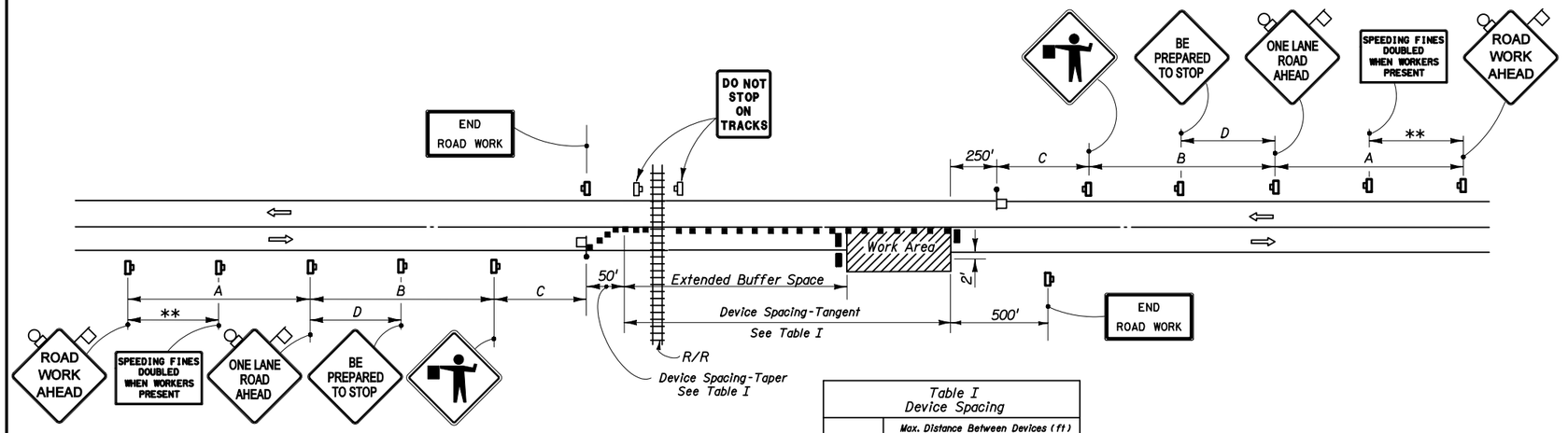

DISTANCE BETWEEN SIGNS				
Speed	Spacing (ft)			
	A	B	C	D ***
40 mph or less	200	200	200	100
45 mph	350	350	350	175
50 mph	500	500	500	250
*55 mph or greater	2640	1640	1000	500

* The ROAD WORK 1 MILE sign may be used as an alternate to the ROAD WORK AHEAD sign.

** 500' beyond the ROAD WORK AHEAD sign or midway between signs whichever is less.

*** BE PREPARED TO STOP sign may be omitted for speeds of 45 MPH or less.

Table I
Device Spacing

Speed (mph)	Max. Distance Between Devices (ft)			
	Cones or Tubular Markers		Type I or Type II Barricades or Vertical Panels or Drums	
	Taper	Tangent	Taper	Tangent
25 to 45	20	50	20	50
50 to 70	20	50	20	100

SYMBOLS

- Work Area
- Sign With 18" x 18" (Min.) Orange Flag And Type B Light
- Type I, Type II Or Type III Barricade Or Vertical Panel Or Drum
- Channelizing Device (See Index No. 600)
- Work Zone Sign
- Flagger
- Lane Identification + Direction of Traffic

GENERAL NOTES

1. Work operations shall be confined to one traffic lane, leaving the opposite lane open to traffic.
2. All vehicles, equipment, workers (except flaggers), and their activities are restricted to one side of the roadway.
3. Additional one-way control may be effected by the following means:
   (1) Flag-carrying vehicle; (2) Official vehicle; (3) Pilot vehicles; (4) Traffic signals.

   When flaggers are the sole means of one-way control the flaggers shall be in sight of each other or in direct communication at all times.
4. The ONE-LANE ROAD signs are to be fully covered and the FLAGGER signs either removed or fully covered when no work is being performed and the highway is open to two-way traffic.
5. When a side road intersects the highway within the TTC zone, additional TTC devices shall be placed in accordance with other applicable TCZ Indexes.
6. The two channelizing devices directly in front of the work area and the one channelizing device directly at the end of the work area may be omitted provided vehicles in the work area have high-intensity rotating, flashing, oscillating, or strobe lights operating.
7. Discontinuing of extended buffer space will not occur until the queue length plus 300' is reached.
8. If the queuing of vehicles across active rail tracks cannot be avoided, a uniformed traffic control officer or flagger shall be provided at the highway-rail grade crossing to prevent vehicles from stopping within the highway-rail grade crossing, even if automatic warning devices are in place.
9. For general TCZ requirements and additional information, refer to Index No. 600.

DURATION NOTE

1. ROAD WORK AHEAD and the BE PREPARED TO STOP signs may be omitted if all of the following conditions are met:
   a) Work operations are 60 minutes or less.
   b) Speed limit is 45 mph or less.
   c) No sight obstructions to vehicles approaching the work area for a distance equal to the buffer space.
   d) Vehicles in the work area have high-intensity, rotating, flashing, oscillating, or strobe lights operating.
   e) Volume and complexity of the roadway has been considered.
   f) No queuing of vehicles across rail tracks.

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT, WORKERS OR THEIR ACTIVITIES ENCROACH THE AREA BETWEEN THE CENTERLINE AND A LINE 2' OUTSIDE THE EDGE OF TRAVEL WAY THAT REQUIRES A LANE CLOSURE IN THE VICINITY OF A RAILROAD CROSSING.

2006 FDOT Design Standards

WORK IN VICINITY OF RAILROAD CROSSING

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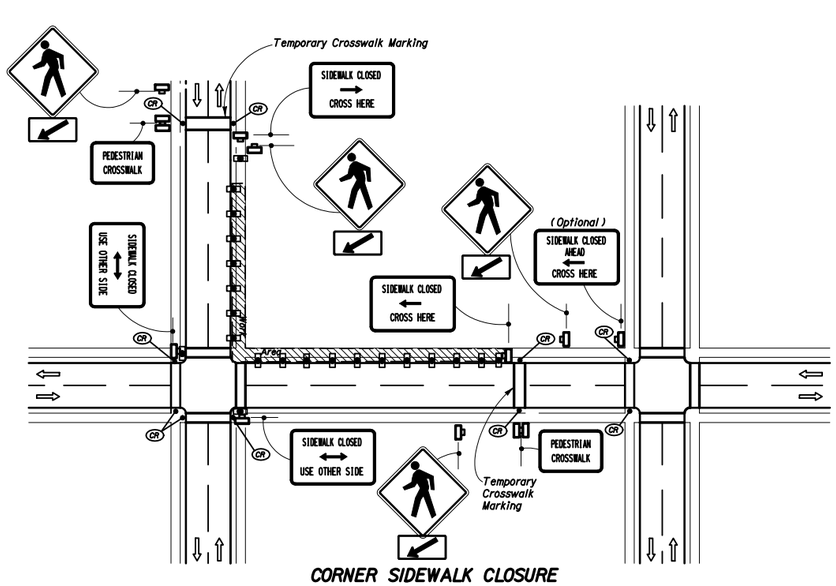
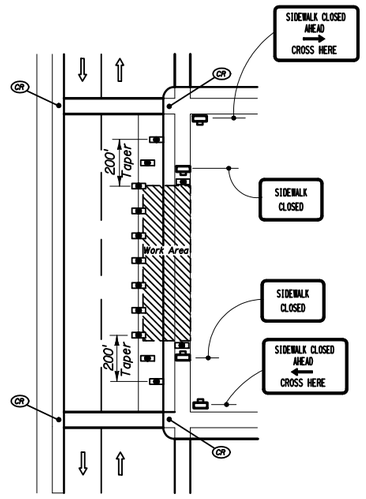
Index No. 635

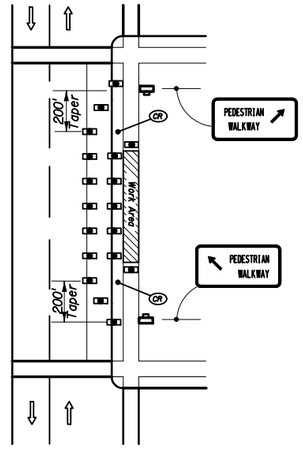
DATE	UTILITY ACCOMMODATION MANUAL REVISIONS
07/01/07	"GENERAL NOTES"-Note 2 is deleted.



CORNER SIDEWALK CLOSURE
WITH TEMPORARY CROSSWALKS



MID-BLOCK SIDEWALK
CLOSURE



MID-BLOCK SIDEWALK CLOSURE
WITH TEMPORARY WALKWAY

GENERAL NOTES

1. Only the signs controlling pedestrian flows are shown. Other work zone signs will be needed to control traffic on the streets.
2. For spacing of traffic control devices and general TCZ requirements refer to Index No. 600. Maximum spacing between barricades, vertical panels, drums or tubular markers shall not be greater than 25'.
3. Street lighting should be considered.
4. For nighttime closures use Type A flashing warning lights on barricades supporting signs and closing sidewalks. Use Type C steady-burn lights on channelizing devices separating the work area from vehicular traffic.
5. Pedestrian traffic signal display controlling closed crosswalks shall be covered or deactivated.
6. Post Mounted Signs located near or adjacent to a sidewalk shall have a 7' minimum clearance from the bottom of sign to the sidewalk.
7. When construction activities involve sidewalks on both sides of the street, efforts should be made to stage the construction so that both sidewalks are not out of service at the same time.
8. In the event that sidewalks on both sides of the street are closed, pedestrians shall be guided around the construction zone.
9. Temporary walkways shall be a minimum of 4' wide with a maximum 0.02 cross slope and a maximum 0.05 running slope between ramps. Temporary walkways less than 5' in width shall provide for a 5' x 5' passing space at intervals not to exceed 200'. Temporary ramps shall meet the requirements for curb ramps specified in Index No. 304, General Notes 1 through 7. Temporary walkway surfaces and ramps shall be stable, firm, slip resistant, and kept free of any obstructions and hazards such as holes, debris, mud, construction equipment, stored materials, etc.
10. Temporary ramps and temporary crosswalk markings shall be removed with reopening of the sidewalk, unless otherwise noted in the plans. All work and materials associated with constructing temporary curb ramps and temporary crosswalk markings, removal and disposal of temporary curb ramps and temporary crosswalk markings, and restoration to original conditon shall be paid for as Maintenance of Traffic, Lump Sum.

SYMBOLS

- Work Area
- Type I Or Type II Barricade Or Vertical Panel Or Drum (With Steady Burning Light At Night Only).
  (Tubular Markers May Be Used During Daylight Only. Cones May Be Used - See Index No. 600.)
- Work Zone Sign
- Required Locations For Either Temporary Or Permanent Curb Ramps.
- Lane Identification + Direction of Traffic

CONDITIONS

WHERE ANY VEHICLE, EQUIPMENT WORKERS OR THEIR ACTIVITIES ENCROACH ON THE SIDEWALK FOR A PERIOD OF MORE THAN 60 MINUTES.

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PEDESTRIAN CONTROL FOR CLOSURE OF SIDEWALKS	07/01/05	1 of 1
	Index No.	660

DATE	UTILITY ACCOMMODATION MANUAL REVISIONS

MAINTENANCE OF TRAFFIC TRAINING – APPENDIX D

PURPOSE:

To provide direction for training requirements for personnel involved in the planning, design, supervising, implementation, and maintenance of work zone safety. These requirements include 1) identifying responsibilities of the Department and Sponsor/ Providers; 2) providing a method for submittal, review, and evaluation of training courses for qualification as an approved course and a process for periodic reevaluation of each course for continued approval or removal from the approved course list; and 3) providing description of the different categories of training, the content requirements for each category course, and the category of training necessary for different responsibility duties.

AUTHORITY:

Sections 334.044, 334.048, 337.401 and 316.0745, Florida Statutes (F.S.)
Florida Administrative Code Rule 14-15.010 and 14-46.001 (F.A.C.)
Federal-Aid Policy Guide 23 CFR Parts 630J and 655F (Federal Regulations).

SCOPE:

Training courses approved in accordance with this procedure or the Utility Accommodation Manual (UAM) Section 8.4 shall be the only training accepted as meeting the standards for qualifying persons to plan, design, implement, inspect, and/or supervise the selection, placement, or maintenance of traffic control schemes and devices in work zones on streets and highways within the State Highway System right of way. Persons possessing current valid and verifiable wallet cards issued by an approved Provider in accordance with this procedure or identification issued or approved by a certified Utility Agency Owner in accordance with the UAM shall be the only personnel approved to work on the maintenance of traffic activities for which they have been trained.

REFERENCES:

- Procedure No. 750-030-010 (Maintenance of Traffic Committee);
- Part 6 of the Manual on Uniform Traffic Control Devices (MUTCD);
- Design Standards, Topic No. 625-010-003;
- Plans Preparation Manual (FPPM) Topic No. 625-000-007;
- Construction Project Administration Manual (FCPAM), Topic No. 700-000-000;
- Utility Accommodation Manual, Topic No. 710-020-001, and
- Standard Specifications for Road and Bridge Construction.

BACKGROUND:

Work zone traffic control is an important function necessary in providing a safe environment in those areas where workers and transportation modes may compete for common or adjacent space. Every reasonable effort should be made to reduce the risk of injury to both the worker and the transportation system user in these areas of potential conflicting interests. In order to achieve this goal, proper training of all personnel involved in the planning, design, supervising, implementations and maintenance of work zone traffic control is necessary.

The Department has established a ***Maintenance of Traffic Committee (MOTC), Topic No. 750-030-010***, consisting of representatives appointed by the Chief Engineer from the Department's Central and District Design, Construction, Maintenance offices and Traffic Operations, and from the Federal Highway Administration (FHWA). This committee's functions include making recommendations on procedures, standards, and specifications involving work zone traffic control issues and to oversee training courses for approval that are submitted in compliance with this procedure.

DEFINITIONS:

Administrator - An individual or group assuming the responsibility of processing courses under the direction of the MOTC.

Department - The State of Florida Department of Transportation.

District - Any of the Department's administrative subdivisions that are headed by a District Secretary.

Institution Training Facility - Any training facility that has a staff of instructors and offers career advancement and enhancement training. The following shall be considered as meeting these criteria: Members of the State of Florida University System, the Department and other state agencies.

MOTC and **MOTSC**-The Department's Maintenance of Traffic Committees as established by ***Maintenance of Traffic Committee (MOTC), Topic No. 750-030-010***.

Utilities – All privately, publicly or cooperatively owned utilities as established by the ***Utility Accommodation Manual, Topic No 710-020-001***.

May - This is a permissive condition. It is used to identify allowable alternatives.
Shall - This is a mandatory condition or requirement.

Should - This is an advisory condition. This refers to the recommended or preferred process to be followed.

Sponsor/Provider - One who assumes the responsibility of providing the financial support, training materials, and training for Department approved Maintenance of Traffic training

course.

1. RESPONSIBILITIES

(A) Department:

The MOTC shall:

(1) Have direct responsibility for the content and revision of this procedure and associated attachments.

(2) Oversee the Administrator responsible for the processing and evaluation of the work zone traffic control training course material in accordance with this procedure submitted by sponsor/providers.

(3) Prescribe work zone traffic control training requirements for Department employees and any other persons performing work within the State Highway System right of way.

(4) Furnish training course information and requirements to Central Office and District Human Resource Development Managers to coordinate delivery of training.

(B) Sponsor/Provider:

The Sponsor/Provider shall:

(1) Submit Training Courses to the Administrator for review and approval. Utility Providers may elect to waive the course review by the Administrator by submitting a utility self certification letter to the Administrator stating that they certify their course and instructors meet all the requirements contained in this procedure.

(2) Provide training in the appropriate category.

(3) Update course every two years and resubmit for approval.

(4) Provide documentation of instructor qualifications.

(5) Furnish course material for each student.

(6) Provide the minimum training that is required by this procedure for category approved.

(7) Document students' training with a wallet size card after successful

completion of the course. Certificates may also be issued at the option of the Provider.

(8) Document all students' course training by: student name, course category, course date, course location, providers' name, instructors' name, pass/fail status, and date when training or a refresher course is required.

(9) Submit a yearly report of all the students trained during the last four years. This report should contain the following information: student name, course category, course date, course location, providers name, instructors name, pass/fail status, and date when training or a refresher course is required. Submit this report to the MOTC by January 31 each year.

(10) Provide original of each student's evaluation form of the course and the instructor(s) to the MOTC within one month after the date the course is taught.

2. COURSES REVIEW AND EVALUATION

2.1 Upon receipt of the training course the Administrator shall review the course content, method of instruction, and conformance to Department standards and determine the appropriate category of the training course. This review should be completed within 60 calendar days and the Administrator shall present its findings to the full MOTC for approval or disapproval. Upon receipt of a utility self certification letter the Administrator shall process within 30 calendar days.

2.2 The Administrator shall forward to the course sponsor/provider all general comments regarding the approval or disapproval of the pending training course. The course or utility self certification letter shall be approved by the MOTC before the sponsor/provider may implement any training of personnel that work within State Highway System right of way.

2.3 Review and approval of course updates or revisions shall follow the same evaluation schedule.

3. APPROVED COURSES

3.1 The State Roadway Design Engineer's Office shall maintain a list of approved courses and their sponsors/providers. The official list of approved courses, category descriptions, and addresses of course sponsors/providers and approved instructors is provided on the Department's Web site at:

http://www.dot.state.fl.us/rddesign/MOT/MOT.htm

3.2 A minimum of one current copy of each approved course's materials and accompanying documentation or utility self certification letter shall be maintained by the Administrator including approval dates for the original course and all subsequent revisions

3.3 The Sponsor/Provider is responsible for submitting and monitoring courses to assure that course updates are performed every two years. Failure to keep a course current and updated will result in the course Sponsor/Provider having its course removed from the approved course list.

3.4 When courses are identified by the Administrator as needing updating, the Administrator shall advise the sponsor/provider in writing of the pending removal of its course from the approved course list if the course is not made current. If the sponsor/provider does not update course to meet the training requirements of this procedure and submit the update or utility self certification letter for review by the Administrator within two months, the MOTC chairperson shall advise the State Roadway Design Engineer's Office that the course shall be removed from the approved course list or to hold such action pending an ongoing review of a course revision.

3.5 Records, utility self certification letters and course materials for those courses removed from the approved course list shall be maintained by the Administrator for a period of four years. Personnel trained utilizing such courses while they were in approved status shall be considered as having met the training requirements of this procedure.

4. TRAINING REQUIREMENTS

4.1 The objective of these training courses is to provide every person involved with Work Zone Traffic Control with constant and consistent education to ensure that Department standards are followed in planning, designing, supervising, implementing, and maintaining work zone traffic control.

4.2 Work zone traffic control schemes and devices shall not be implemented or installed in the field unless performed by or under the direct supervision of a person who has satisfactorily completed the training requirements prescribed herein.

4.3 All Department employees, contractors, consultants, surveyors, utility company personnel, local maintaining agency, or any other appropriate person responsible for work zone traffic control planning, design, implementation, inspection, and/or for supervising the selection, placement, or maintenance of traffic control schemes and devices in work zones on the State Highway System right of way shall satisfactorily complete the training requirements of this procedure in the appropriate category of involvement in accordance with the authority identified in the Authority section.

4.4 The Department shall require documentation of successful completion of a Work Zone Traffic Control training course. This requirement is included in such documents as construction, maintenance, design or inspection contracts, specifications, special provisions, the ***Utility Accommodation Manual***, ***No. 710-020-001***, and permits.

4.5 This procedure does not apply to Law Enforcement Officers.

5. TRAINING CATEGORIES

5.1 To satisfy the Department's training requirements, the MOTC identified four training categories for Work Zone Traffic Control and Maintenance of Traffic training courses.

(A) Basic Training

(1) This course is required for all persons with the following duty:

(a) Flagging traffic

(B) Restricted Activities Training

(1) This course is required for all persons with duties that include any of the following activities:

(a) Direct responsibility for placement of work zone traffic control devices for minor work where the work activity complies the following condition:

- Utilize only work zone setups covered in ***2006 Design Standards Indexes 601, 602, 603, 604, 605, 611, 612, 613, 615, 616, 635*** and ***660***, in accordance with ***Index 600*** requirements. For work zone setups other than those specifically covered in these indexes, Intermediate or Advance Training is required as applicable.

(C) Intermediate Training

(1) This course is required for all persons with duties that include any of the following activities:

(a) Direct responsibility for placement of work zone traffic control devices;
(b) Direct responsibility for field maintenance of work zone traffic control devices;

(c) Inspection of the placement or operational function of work zone traffic control devices;
(d) Drafting or electronic generation of work zone traffic control plans.

This course is not required for persons having successfully completed the Restricted Activities Training Course for activities limited to those described in ***Section 5.1(B)***.

(D) Advanced Training

(1) This course is required for personnel with responsibility or authority to decide on the specific maintenance of traffic requirements to be implemented. These positions include the following:

(a) The engineer responsible for the work zone traffic control plan development;

(b) The work zone traffic control supervisor.

This course is not required for submitting Traffic Control Plans for utility work, unless such persons have to sign and seal the Traffic Control Plans in accordance with the ***UAM***.

5.2 Restricted Activities, Intermediate and Advanced courses shall provide for a refresher course that contains an overview of the initial course with concentration on any changes to the information that has occurred in the most recent four years.

5.3 Training or refresher courses, for all 4 category levels, are required every four years for all persons to continue to be qualified to perform their assigned duties. Persons who have maintained current certification by retesting from an approved provider may take a training or refresher course to comply with this procedure.

5.4 Upon successful completion of a training course, each individual shall receive a wallet size card, reflecting the student's name, the provider's name and ID #, the instructor's name, the course category, the date the course was successfully completed and the issuance date, and the date training, or a refresher course, is required Certificates may also be issued at the option of the Provider.

6. SUBMITTAL AND EVALUATION SPONSOR/PROVIDER TRAINING COURSE CRITERIA

6.1 Submit Maintenance of Traffic (MOT) training courses (Restricted Activities,

Restricted Activities Refresher, Intermediate, Intermediate Refresher, Advanced, or Advanced Refresher) or utility self certification letter to the Department's Maintenance of Traffic Training Administrator for review and approval. The Administrator shall review the course content, method of instruction, and the appropriate category of course training prior to approving its use in training of personnel that work within the State Highway System right of way. An Institutional Training Facility or Utility shall sponsor all courses submitted. The sponsor shall meet all training course requirements contained in this procedure, before performing MOT training in the State of Florida.

The facility or utility shall also retain copies of all student test records, and evaluation forms. In addition, providers of Restricted Activities Refresher, Intermediate Refresher or Advanced Refresher courses must document that they have checked that each student possesses a current (no more than four years old), valid and verifiable wallet card for the appropriate category prior to issuing a student a new wallet card upon successful completion of the appropriate category refresher course.

6.2 Sponsors/Providers requesting the MOTC to evaluate a training course or a refresher course shall submit two copies of course material, lesson plan, test with answers, resumes, workshop exercises, sample copy of their wallet size card, and accompanying documentation of their course to:

(A) The Administrator currently responsible for processing courses under the direction of the MOTC.

(B) The name of the Administrator and contact information can be found on the Department's webpage at:
http://www.dot.state.fl.us/rddesign/MOT/MOT.htm

6.3 Minimum qualification requirements for instructor:

(1) Basic: Successful completion of Intermediate or Advanced Course with a current valid and verifiable wallet card.

(2) Restricted Activities and Intermediate: Successful completion of an Intermediate or Advanced Course with a current valid and verifiable wallet card. Two years of appropriate work zone experience in responsible charge for specific work zone activities in one or more of the following:

Highway:

(a) Design

(b) Construction
(c) Maintenance
(d) Utilities
(e) Traffic Operations

(3) Advanced: Successful completion of an Advanced Course with a current valid and verifiable wallet card. Documentation describing the instructor's knowledge, skills, and abilities detailing his/her involvement in using the following State of Florida documents: ***Design Standards, Plans Preparation Manual***, ***Construction Project Administration Manual***, and ***Standard Specifications*** for work zones applications. Two years of appropriate responsible charge of MOT plans preparation, inspection, or supervision. Work zone experience engaged in one or more of the following:

Highway:

(a) Design
(b) Construction
(c) Maintenance
(d) Utilities
(e) Traffic Operations

(4) Provide documentation of training experience, qualifications and a copy of the instructor's current valid wallet card.

(5) The MOTC has the authority to review/approve instructors who do not meet the above training requirements. If the MOTC determines the instructor has equivalent education or experience, the MOTC will waive this training requirement. This waiver will require a two-thirds vote by the full MOTC membership. A waiver will be granted for instructors who do not meet the minimum qualifications for instructors when a District Director of Operations/Production recommends to the MOTC that a DOT employee in their District is qualified to provide training in the appropriate category.

6.4 The Course Sponsor/Provider provide all necessary course materials (workbooks, study/reference information, and examination). Each student shall be approved based on the training requirements of this procedure. The instructor shall follow the lesson plan that was submitted to and approved by the MOTC.

6.5 Training shall be offered in up to four categories: Basic, Restricted Activities, Intermediate, or Advanced. In order to successfully complete Basic Training, the instructor shall determine that the trainee has demonstrated knowledge and proficiency in flagging operations. Successful completion of the Restricted Activities,

Restricted Activities Refresher, Intermediate, Intermediate Refresher, Advanced or Advanced Refresher training course by the student shall consist of classroom training, problem solving, and a written test with a score of 70% or greater. Higher course categories may be substituted for lower course categories.

6.6 Prerequisites:

(1) Basic Training

No experience necessary;

(2) Restricted Activities Training

No experience necessary;

(3) Intermediate Training

No experience necessary;

(4) Advanced Training

One year experience in work zone traffic control or responsible for work zone traffic control plan development;

(5) Refresher Training

Persons that have successfully completed training in the Restricted Activities or Intermediate or Advanced category and have kept their certification current by retesting from an approved provider may take the appropriate category refresher course to comply with this procedure. A failing grade on the refresher test, requires that the full course must be taken and successfully completed. A wallet card from an approved provider must be no more than four years old to be considered current.

6.7 Course Content - The minimum requirements for each course shall be as follows:

6.7.1 Basic Training - The minimum basic training areas to be covered shall be ***Part 6 of the MUTCD Section 6E (Flagger Control),*** and ***Design Standards Index 600 (Flagging Operations and Night Time Flagging)*** and ***(General Information for Traffic Control through Work Zones)***. The field demonstration shall be a dexterity test using hand-signaling devices (STOP/SLOW paddle and flag) during flagging type operations and placement of traffic control devices. In order to successfully complete Basic Training, the instructor shall determine that the flagger has demonstrated knowledge and proficiency in flagging operations. A

person who has successfully completed the Restricted Activities, Restricted Activities Refresher, Intermediate, Intermediate Refresher, Advanced, or Advanced Refresher Course and holds a current valid and verifiable, wallet card may provide training for flaggers.

The instructor may use training videos, handouts, or other methods to ensure that the flagger has demonstrated knowledge and proficiency in flagging operations. No formal submittal of this course to the MOTC for review is required. No time requirement is set for the training, but the instructor will be required to keep a record of persons they have successfully trained and the date they were trained.

6.7.2 Restricted Activities Training - Classroom instruction on the Design Standards and MUTCD. The minimum Restricted Activities training classroom and field demonstration areas to be covered shall be ***Part 6*** of the ***MUTCD, 2006 Design Standards Indexes 600, 601, 602, 603, 604, 605, 611, 612, 613, 615, 616, 635*** and ***660*** and students participating in a workshop exercise selecting and setting up sample work zone. Flagging operations shall be covered in enough detail that a person who successfully completes this course is capable of providing basic training as described above. A written test with at least 15 questions on traffic control devices, 30 questions on the minimum design standards for traffic control on the State Highway System.

6.7.3 Intermediate Training - Sixteen hours of classroom instruction on the Design Standards and MUTCD. The minimum intermediate training classroom and field demonstration areas to be covered shall be ***Part 6*** of the ***MUTCD, Index 600*** series (in detail) of the ***Design Standards*** and students participating in workshop exercises selecting and setting up two sample work zones. Flagging operations shall be covered in enough detail that a person who successfully completes this course is capable of providing basic training as described above. A written test with at least 15 questions on traffic control devices, 30 questions on the minimum design standards for traffic control on the State Highway System.

6.7.4 Advanced Training - Twenty hours of classroom instruction on the ***Design Standards, MUTCD, Florida's Plans Preparation Manual (FPPM), Florida's Construction Project Administration Manual (FCPAM)***, and ***Florida's Standard Specifications for Road and Bridge Construction (FSSRBC)***. The minimum advanced training classroom and field MOT review areas to be covered shall be an in-depth and comprehensive review of ***Part 6 of the MUTCD and Design Standards (Index 600 series), FPPM (Vol. I, , Ch. 10, & Vol. II Ch. 19), FCPAM Ch.9, FSSRBC (Sections 8-4, 8-6.1, 102)***, design exercises and problem solving of MOT on traffic control plans. Participating in design work samples of rural multi-lane, urban multi-lane, interstate, high volume multi-access urban multi-lane, and traffic control plan exercises that include the design of an MOT traffic plan (that requires special treatment not covered in the ***MUTCD*** or the ***Design Standards***) and plan exercises that contain dysfunctional elements that require

problem solving is required. Flagging operations shall be covered in enough detail that a person who successfully completes this course is capable of providing basic training as described above. A written test with at least 30 questions on traffic control devices, 30 questions on the minimum design standards for traffic control on the State Highway System.

6.7.5 **Refresher Course -** The refresher course shall consist of an overview of the initial course with concentration on the applicable changes that have occurred in the most recent four years to the ***Utility Accommodation Manual (UAM), Design Standards, Part 6 of the MUTCD, Florida's Plans Preparation Manual (FPPM), Florida's Construction Project Administration Manual (FCPAM),*** and ***Florida's Standard Specifications for Road and Bridge Construction (FSSRBC)***. Course length for refresher courses shall be determined by the sponsor/provider. The written test for each refresher course shall meet the same requirements as the initial course test for that category with approximately 25% of the test questions related to recent changes.

6.8 Wallet Card for Completion for Restricted Activities, Restricted Activities Refresher, Intermediate, Intermediate Refresher, Advanced, or Advanced Refresher Training.

6.8.1 Successful completion of a course is based on a passing score of 70% or greater and successful completion of class exercises. Upon successful completion of a training course, each individual shall receive a wallet size card, which shows the student's name, the provider's name and ID #, the instructor's name, the course category, the date the course was successfully completed, the issuance date, and the expiration date.

6.9 Periodic Evaluation and Course Update

6.9.1 Each course shall be updated every two years. All updates shall be submitted by the course sponsor/provider to the Administrator for approval

6.9.2 The MOTC will require all Sponsor/Provider's to update their course content pursuant to the Rule amendment process. This type of update will not require course resubmittal.

6.10 Students' Training Documentation

6.10.1 Document all students' course training by providing: student name, course category, course date, course location, provider's name, instructor's name, pass/fail status and date when training or a refresher course is required. Provide documentation to the MOTC upon request.

6.11 Courses for training categories shall be stand alone. Any higher category may be

substituted for a lower course category.
(Example: Basic Training requirements can be met by completing the Restricted Activities, Intermediate or Advanced Training courses.)

7. TRAINING

7.1.1 This entire procedure addresses availability of training for work zone traffic control for both Department and non-Department personnel and can be found on the Department's Web site at:
http://www.dot.state.fl.us/rddesign/MOT/MOT.htm

8. FORMS

8.1 Utility providers are not required to complete Form 250-050-11, Tress Report.