

**May 1990**  
**710-020-001-b**

STATE OF FLORIDA  
DEPARTMENT OF TRANSPORTATION

# UTILITY ACCOMMODATION GUIDE

MAY 1990  
Document No. 710-020-001-b

## TABLE OF CONTENTS

	<b>Page</b>
<b>1. INTENT OF UTILITY ACCOMMODATION GUIDE</b>	<b>1</b>
<b>2. UTILITY PERMIT</b>	<b>1</b>
A. Utility Permit	1
B. Application	1
C. Processing	3
<b>3. REQUIREMENTS FOR PERMITS</b>	<b>5</b>
A. Installations Requiring Permits	5
B. Installations Not Requiring Permits	6
C. Additional Permit Requirements	6
D. Failure to adhere to Permits	7
<b>4. ACCOMMODATIONS STANDARDS</b>	<b>11</b>
A. Basic Requirements	11
B. Crossings	13
(1) General	13
(2) Limited Access	13
(3) Other Systems	17
(4) Pavement Cutting	18
C. Attachments to Structures	18
(1) General	18
(2) Responsibility	19
(3) Criteria	20
(4) Location	22
(5) Materials	22
(6) Corrosion Mitigation	23
(7) Thermal Expansion	23
(8) Approval	24
<b>5. SPECIAL REQUIREMENTS FOR INSTALLATION, RESTORATION OF RIGHT OF WAY AND MAINTENANCE OF UTILITY</b>	<b>24</b>
<b>6. MAINTENANCE OF VEGETATION</b>	<b>26</b>
<b>7. MAINTENANCE OF TRAFFIC</b>	<b>28</b>
<b>8. LOCATION CRITERIA FOR UTILITIES</b>	<b>29</b>
A. Rural and Urban Freeways and Rural Arterials	

and Collectors	29
(1) Light Poles	30
(2) Utility Poles	30
(3) Parallel (Underground)	30
(4) Crossing (Aerial)	30
(5) Crossing (Underground)	30
B. Rural Arterials and Collector	31
(1) Light Poles	31
(2) Utility Poles	31
(3) Parallel (Underground)	31
(4) Crossing (Aerial)	31
(5) Crossing (Underground)	31
C. Rural Collectors	31
(1) Light Poles	31
(2) Utility Poles	31
(3) Parallel (Underground)	31
(4) Crossing (Aerial)	31
(5) Crossing (Underground)	31
D. Urban Arterials and Collectors	32
(1) Light Poles	32
(2) Utility Poles	32
(3) Parallel (Underground)	32
(4) Crossing (Aerial)	32
(5) Crossing (Underground)	32
E. Urban Arterials and Collectors (Curb and Gutter)	
(1) Light Poles	32
(2) Utility Poles	32
(3) Parallel (Underground)	32
(4) Crossing (Aerial)	32
(5) Crossing (Underground)	33
<b>9. GENERAL REQUIREMENTS</b>	<b>33</b>
<b>10. ATTACHMENTS OF EXHIBITS</b>	
A. Definitions of Terms	36
B. Utility Permit (Form 592—03)	38
C. Design Criteria Related to Highway Safety (Index No. 700)	40
D. Example Procedure for Aerial Crossing	43
E. Pavement cuts	49
F. Jacking and Boring	51
G. Bridge Attachment	73
H. Department Rule 14-46	80
Railroad/Utilities Installation or Adjustment	
I. Policy on Limited Access Accommodation	83

## 1. INTENT OF UTILITY ACCOMMODATION GUIDE

This guide is established to regulate the location, manner, installation and adjustment of utility facilities along, across or on any road under the jurisdiction of the Department of Transportation excluding the Florida Turnpike. The Guide also is used for issuing permits for such work in the interest of safety and of protection, utilization and future development of the highways with due consideration given to public service afforded by adequate and economical utility installations as authorized under Section 337.403, Florida Statutes and Florida Administrative Code Rule 14-46.001. Adherence shall be required under the circumstances set forth in this guide. Where actual field conditions vary from those outlined in this guide, disputes may arise as to what accommodation criteria are appropriate under the actual conditions. Such disputes which cannot be resolved at the local or District level by mutual agreement shall be referred to the State Maintenance Engineer for final resolution. While this guide governs matters concerning future location, manner and methods for the installation or adjustment and maintenance of utilities on highway right 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.

Where the Utility has a compensable interest in the land occupied by its facilities and such land is to be jointly owned or used for highway and Utility purposes, the Department and Utility 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 highway authority in any portion of the right of way of a highway project to be vacated, used or occupied by utilities or private lines shall be of a nature and extent adequate for the construction, safe operation and maintenance of the highway project. The procedure will be as outlined in the Department's Right of Way Policy Manual, see Rule 14-15.005, FAC.

## 2. UTILITY PERMIT

### A. Utility Permit:

A permit must be approved by the Department before any utility is installed on the right of way, whether it is for aerial or underground installations or attachment onto bridge structures, except as noted in this Guide. Permit Form 592-03 (Exhibit B) may be obtained by the applicant from the local Maintenance Engineer's or District Maintenance Engineer's Office.

B. Application:

- (1) Schematic installation plans of the proposed installation, not necessarily to scale, shall accompany each copy of the application. These plans should be folded to a size not to exceed 8 1/2 X 14". It shall show the offset from the centerline to the proposed utility installation, the road right of way and pavement width, distance from edge of pavement to utility, limited access line, and the roadway section and mile post numbers of the job, station numbers and bridge number. The drawing(s) must show information such as materials to be used, pipe or conduit size, use of line (power with voltage, gas with maximum allowable operating pressure, etc.) and other pertinent details. One or more typical cross sections as required to adequately reflect the location of the utility shall be shown.

All known involved utilities must 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 overhead or underground facilities involve only one side of the right of way, then only involved utilities on that side of the right of way need to be shown on the permit drawing. In all cases, the applicant shall list all known right of way users on the permit form and notify each of them by copy of the permit drawing whether they are involved or not. The minimum vertical clearance above or below the pavement shall be shown.

Additional information such as the location to either the nearest town, major road intersection, bridges, railroad crossings or other physical features shall be indicated on the plans. A simple key map showing the location of this proposed facility should be included.

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

- (2) For utility accommodation onto structures the application shall include, as an Exhibit, all applicable construction plans and specifications for the accommodation of the Utility. See Section 4.C. and Exhibit G.
- (3) When the applicant is a corporation or a public body, then the permit must have a corporate seal and must be attested to by the corporation secretary or by the empowered public official, unless a waiver of corporate seal and attestation by the secretary or by the empowered public official is on file in the State Utilities Office, Tallahassee and so noted on the permit.

The State Utilities Office will, upon request, furnish instructions and forms for waiver of corporate seal to the corporation.

- (4) When the applicant is the owner of the utility, which is not a corporation, then his signature must be witnessed by two persons whose signatures must likewise be on the permit. All signatures must be original. The names of all persons signing the permit application must be typed directly below their signatures.
- (5) Whenever Utility installation, adjustment or maintenance activity will affect the movement of traffic or traffic safety, the Utility shall implement a traffic control plan and utilize traffic control devices as necessary to ensure the safe and expeditious movement of traffic around the work site and the safety of the utility work force in accordance with the standards set forth in the Manual on Uniform Traffic Control Devices (MUTCD), see Rule 14-15.010, FAC, and the Department Roadway and Traffic Design Standards-Index (Series 600) concerning safety. See Section 7 below for Maintenance of Traffic requirements.

C. Processing:

- (1) The applicant will submit three (3) originals to the Maintenance Engineer in the area in which the work is to be performed. For installations on current or proposed construction projects by the Department, the local Maintenance Engineer will submit the permit application directly to the District Utilities Engineer, and will notify the applicant if processing is anticipated to exceed 30 days.
- (2) Each permit shall be processed in an expeditious manner in order to minimize any unnecessary delays for the applicant, in accordance with Florida Law.
- (3) The local Maintenance Engineer is authorized to approve permit applications, except as specified elsewhere in this guide. (See in particular sections of the Guide on limited access, bridge attachments, and non-conforming appurtenances as specified in Section 9 of the Guide.) Those applications on which the local Maintenance Engineer is not authorized to act will be forwarded to the District Maintenance Engineer for action. Exception for Limited Access Permit application under Section 4.B. (2) must be approved by the State Transportation Engineer. Upon approval, executed permits will be distributed to the applicant, to the local Maintenance Engineer and placed in the District Maintenance Engineer's Office file.

- (4) Where roadway construction is proposed or in progress, the District Utilities Engineer will review the permit and indicate his approval based on conformance with the Utility Accommodation Guide and the roadway construction requirements prior to approval by the District Maintenance Engineer. The District Utilities Engineer will notify the applicant of any future proposed construction and resolve those conflicts where possible.
- (5) All permit applications involving scenic enhancement areas are to be reviewed and approved by the District Maintenance Engineer or authorized representative.
- (6) All permit applications involving attachment onto bridge structures shall be reviewed and approved by the District Structures Engineer prior to approval by the District Maintenance Engineer or his authorized representative.
- (7) 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 State Maintenance Engineer and the State Corrosion Engineer for review and comment prior to approval.
- (8) The applicant shall notify, in writing, all other known involved right of way users in the right of way at the location of the proposed installation stating his intentions to determine possible objections if the proposed installation will affect those right of way users. Any objections to the applicant's proposed construction by such right of way users or involved Counties, Municipalities and Railroads must be forwarded to both the applicant and to the applicable local Maintenance Engineer within seven (7) days of the applicant's notification letter. Such objections must be specifically defined.
- (9) All permit applications for right-of-way covered by easements from U.S. Forest Service shall be forwarded to the District Maintenance Engineer for coordination with the U.S. Forest Service.
- (10) Upon completion of the utility construction, Page 2 of Form 592-03 ("Utility Permit Final Inspection Report", Exhibit B) shall be filled out by the local Maintenance Engineer/District Permit Engineer or authorized representative and filed with the fully executed original permit in the District Maintenance Engineer's Office.



### 3. REQUIREMENTS FOR PERMITS

#### A. Installations Requiring Permits:

- (1) A permit is required for all underground installations and all overhead lines and crossings except certain service connections as covered in Paragraph B of this section.
- (2) Permits are required for all lines crossing the right of way including those originating from poles outside the right of way. This requirement applies to all crossings including service drops and head or span guys except as covered in paragraph B of this section.
- (3) Permits are required for all additional facilities when:
  - (a) It is necessary to place a pole within the right of way on the opposite side of the road where there is not an existing pole line.
  - (b) It is necessary to place a pole adjacent to a buried cable where the existing permit does not include a pole line.
  - (c) It is necessary to place a pole beyond the limits of an existing approved pole line. For purposes of this provision, the limits of an existing approved pole line shall mean the distance from the edge of the pavement to the approved pole line plus a maximum of 10% of that distance, but still within the right of way and no closer to the edge of the pavement.
- (4) Permits are required for all above-ground facilities placed in connection with underground installations when not included in the original permit. These include marker poles and riser poles, including pole mounted telephone closures for test or splice purposes. These poles and closures should be located in accordance with applicable criteria in Exhibit C.
- (5) Permits are required when installing a complete street or highway lighting system including installation on existing poles where existing poles are there by virtue of a permit.
- (6) A permit is required for the installation of a private or area light on an existing pole within the right of way where the light pattern, which will conform to Highway Lighting Standards, is to be directed toward the pavement.
- (7) If a new pole is to be set within the right of way to accommodate a private or area light a permit must be obtained regardless of the direction of the light pattern.

- (8) Where existing facilities are to be relocated permanently to another location within the right of way, whether caused by a betterment program of the right of way user, or by highway construction, a permit is required to show the new position of the facility involved.
- (9) Improvements or betterment requiring a physical change of existing facilities will require a permit, except for routine maintenance or minor alterations such as changes in communications cables, transformer capacity, wire size of secondary circuits and primary circuits of a one (1) mile segment or less of an existing utility installation. However, a permit will be required for any alteration or addition to the utility installation (other than routine service drops or span guys) which will cross a roadway either overhead or underground. Normally, such alterations or additions will not be basis for requiring relocation of the existing facility.

B. Installations Not Requiring Permits:

- (1) Any new poles to be placed within an existing permitted pole line
- (2) Service drops or span guys emanating from and/or attached to poles properly covered by an existing permit, including those crossing roadways.
- (3) 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 Agency/Owners of the pending excavation at least forty eight (48) hours in advance.
- (4) Temporary relocation as directed by the DOT Resident Engineer during highway construction projects (temporary relocation also will include new locations as needed for temporary utility service for highway construction projects).

C. Additional Permit Requirements:

- (1) Permittees 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 overdimensional vehicles are covered by Rule Chapter 14-26, Florida Administrative Code.

- (2) Permits shall not be issued for any type of cable television service within a geographic area unless the cable television system requesting the permit holds a valid franchise from the Municipality or County where such a franchise is required by law for the area in which the right of way is located. In areas where no franchise requirement exists, permits may be issued to any cable television system subject to meeting Department guidelines as set forth in this guide.
- (3) Permittee should be aware that Section 335.15, Florida Statutes requires notification of temporary closing of a state road. 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 road for a period of time exceeding two hours, the party performing such work shall give notice to the local law enforcement agency within whose jurisdiction such road 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.
- (4) When construction deviates from design, as-built plans explaining such deviations will be required by the local Maintenance Engineer for major installation defined as follows: water mains (6" or larger), all gas lines except service lines, telecommunications in rigid structures, sanitary lines (all gravity flow mains), sanitary force mains (6" or larger) and electric power cable (all buried electric transmission cables - not service lines).

Note: standard Index #700 governs minimum vertical or horizontal offset dimensions for clear zones.

Required as-built plans for facilities whose location is confidential will be maintained at the offices of the permittee.

- (5) All new or replaced underground facilities within the right of way shall be made detectable using techniques available in the Industry.

D. Failure to adhere to Permit:

When the permittee fails to complete all features of the installation as specified in the permit, the following course of action shall be implemented in preparation for a breach of contracts action.

- (1) The local Maintenance Engineer shall give written notice, by certified mail with return receipt, to the permittee that he is in noncompliance. The following form letter (#1) language should be sent advising of the specific deficiencies and requesting compliance with the permit provisions.
- (2) If no response is received and the deficiencies have not been corrected within thirty (30) days, then the following form letter (#2) notification shall be sent, by Certified Mail with return receipt. This notice shall advise the permittee that he is in nonconformance, and unless the violations are corrected within thirty (30) days of receipt of the notice, the permit shall be revoked and the Utility permittee will be required to remove the utility. The notice shall further advise that the Department's revocation of the permit shall become final Agency action within 30 days of receipt of the notice unless the violations are corrected or an administrative hearing is requested.

It is absolutely necessary to fully document all acts of noncompliance that have occurred with regard to each permit. 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.

LETTER #1

(DATE)

APPLICANT'S

CERTIFIED MAIL # \_\_\_\_\_

NAME & ADDRESS

RETURN RECEIPT  
REQUESTED

RE: PERMIT NO. \_\_\_\_\_ SR \_\_\_\_\_

SECTION \_\_\_\_\_ COUNTY \_\_\_\_\_

DEAR \_\_\_\_\_:

It has recently come to the Department of Transportation's attention that you have failed to comply with the requirements of Permit No. \_\_\_\_\_, issued to you on \_\_\_\_\_.

Our examination reveals the following deficiencies:

Attached is a copy of Permit No. \_\_\_\_\_, for your use. The Department of Transportation requests immediate compliance with the permit provisions, and I request that you contact this office at phone number \_\_\_\_\_ immediately to discuss any problem you have in complying.

Sincerely,

Maintenance Engineer

cc: Legal Operations Office

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
**PERMITTEE NONCONFORMANCE**  
**VIOLATION OF THE FLORIDA STATUTES AND FLORIDA**  
**ADMINISTRATIVE CODE AND NOTICE TO SHOW CAUSE**  
(Pursuant to Chapter 120 and 337, Florida Statutes)

To: \_\_\_\_\_  
(Name)  
\_\_\_\_\_  
(Address)  
\_\_\_\_\_  
(City) (State) (Zip)

Date: \_\_\_\_\_  
Permit Class/Category: \_\_\_\_\_  
Permit No. \_\_\_\_\_

**YOU ARE HEREBY ADVISED:**

Pursuant to the applicable provisions of the Florida Statutes and Florida Administrative Code, you are hereby charged:

- 1. That the facility at the site identified below, is in violation of those provisions of the Florida Statutes and the Florida Administrative Code cited herein, for the reasons indicated:

SITE IDENTIFICATION		VIOLATIONS
STATE ROAD NO	SECTION NO	FLORIDA STATUTE FLORIDA ADMINISTRATIVE CODE DESCRIPTION OF VIOLATION(S)
MILE POST NO	CONSTRUCTION JOB NO	
COUNTY	STATION NO	
GEOGRAPHICAL DESCRIPTION		

- 2. You must comply with the applicable provisions of the said Statute(s) and Code(s) within thirty (30) days from the date of this notice, and written notice of compliance be furnished to:

District Secretary  
Florida Department of Transportation  
\_\_\_\_\_  
(Mailing Address)  
\_\_\_\_\_  
(City) (State) (Zip)

or, in the alternative, an administrative hearing under Section 120.57, Florida Statutes, must be requested by you within thirty (30) days of the date of this notice. The submitted hearing request shall give a brief statement setting forth the reason(s) for review. At the Administrative Hearing you will be required to SHOW CAUSE why your permit should not be revoked. Such hearing request must be furnished to:

The Clerk of Agency Proceedings  
Florida Department of Transportation  
Mail Station 58  
605 Suwannee Street  
Tallahassee, Florida 32399-0458

In either case, if you fail to comply within the thirty (30) day period above and fail to request an administrative hearing then the described violation(s) shall be considered true; and the Department of Transportation reserves the right to take such action as the law permits, including but not limited to the revocation of your permit.

HEREIN FAIL NOT,

Dated this day of \_\_\_\_\_, 19 \_\_\_\_

By: \_\_\_\_\_  
TITLE: \_\_\_\_\_

#### 4. ACCOMMODATIONS STANDARDS

##### A. Basic Requirements:

- (1) The basic requirements governing location of utility installations will be as shown in the location criteria (Section 8). The primary concerns in the design and location of utility installations are the protection of the highway facility and the safety of the highway user and shall give full consideration to sound engineering principles and economic factors.
- (2) For the installation of overhead utilities, one side of the right of way is usually reserved for communication lines and the other side is reserved for power lines. In situations where underground and overhead utilities occupy the same side of the roadway, the overhead facility should be placed on the outside of the underground facility to provide the maximum clear roadside recovery area possible. In cases where more than one Utility proposes an aerial installation on the one side of the highway, a joint-use arrangement must be agreed to by the Utilities.

In cases where the Utilities cannot agree, the dispute shall be referred to the State Transportation Engineer whose determination shall be final. This does not prohibit a single Utility from occupying both sides of the road when there are no objections from other Utilities, proper justification is provided to the Department of Transportation, and there is only one pole line on each side of the right of way.

- (3) Only one pole line will be permitted on each side of the right of way. However, a second pole line to support roadway illumination may be allowed where the need for the roadway illumination is properly documented and provided traffic safety requirements are met.
- (4) Scenic enhancement shall be considered on permit applications. The type and size of utility facilities the manner and extent to which they are permitted along or within highway rights of way can materially alter the scenic quality, appearance and view of highway roadsides and adjacent areas. For these reasons 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, the rights of way of highways adjacent thereto, and the rights of way of sections of highways which pass through 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 highway user or do not impair the visual quality of the lands being traversed. New aerial installations are to be avoided at such locations where there is a feasible and prudent alternative to the use of such lands by the aerial facility. Exceptions will be considered only where:

- (a) Other locations are usually difficult and unreasonably costly, or are more undesirable from the standpoint of visual quality.
- (b) Underground is not technically feasible or is unreasonably costly.
- (c) The proposed installation can be made at a location and will employ suitable designs and materials which give adequate attention to the visual qualities of the areas being traversed.

These controls shall also be followed in the location and design of utility installations that are needed for highway purpose, such as continuous highway lighting, or to serve as Weight Station, Rest Area, or Recreation Area.

Where the described lands were acquired or improved with Federal Aid Highway Funds, permit applications shall be subject to prior review and concurrence by the Division Administrator, Federal Highway Administration. This requirement for approval does not include areas such as National or State Forests, etc., except where Federal-Aid Highway Funds were used to acquire or improve the above listed areas.

- (5) Only single pole lines will be permitted within the road right of way. Any exception must be amply justified and approved by the District Maintenance Engineer.
- (6) All new or relocated longitudinal underground utility facilities shall be placed outside of the pavement of main traveled lanes except where no other safe and practical alternatives are available.
- (7) Where encasement is used and designed as a pressure vessel, the encasement pipe will have strength equal to or exceeding the carrier pipe; however, where the casing is not a pressure vessel, the casing pipe shall be capable of supporting a minimum external load of 2,200 PSF at thirty (30) inches minimum depth. 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. The maximum allowable operating pressure of gas mains must be shown on permit applications.

- (8) When an emergency condition warrants immediate action by the Utility such as a break in a fluid or pressure line or any situation creating a danger to the public welfare, the Utility should proceed immediately with repairs necessary to safeguard the public. The local Maintenance Engineer shall be notified as soon as possible. All such final repair work to the Department's facilities must be approved by the local Maintenance Engineer. If it is the type of work that would normally require a permit, the Utility should prepare and submit a permit after the work is completed. In any case, restoration of right of way will be in accordance with all applicable guidelines.

B. Crossings:

- (1) GENERAL: Crossings under existing pavement will usually be made without cutting the pavement. Underground crossings made by methods other than by open cutting and direct burial shall conform to the provisions of the Jacking and Boring Supplement. See Jacking and Boring Supplement, Exhibit F. The proposed means of placing the pipe shall be stated on the permit. Conditions which are generally unsuitable or undesirable for pipeline crossings should be avoided. These include locations such as:
  - (a) Deep cuts
  - (b) Near footings of bridges and retaining walls
  - (c) Across at grade intersections or ramp terminals
  - (d) At cross drains where flow of water, drift or stream bed may be obstructed
  - (e) Within the basins of an underpass drained by a pump if the pipeline carries a liquid or liquefied gas
  - (f) In wet or rocky terrain where it will be expensive to provide minimum bury

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

- (2) LIMITED ACCESS: In expanding areas along limited access freeways Utilities will install distribution lines, spaced as needed to serve consumers in a general area along either or both sides of a Freeway, so as to minimize the need for crossings of a Freeway by utility service connections. In areas where utility services are not available within reasonable distance along the side of the Freeway where the utility service is needed, crossings of limited access freeways by utility service connections may be permitted. The construction and

maintenance of Utilities should be accomplished without violation of limited access principles. This will normally require the following:

- (a) Underground pipelines crossing between interchanges should be encased between toe of slopes. Casing pipe for flammable gases and fluids will be vented at the right of way line. Welded steel pipe transmitting gas or liquid petroleum may be installed without encasement provided such pipelines conform with 49 CFR, Part 192, Transportation of Natural Gas by Pipeline or Part 195, Transportation of Liquids by Pipeline, as applicable. The pipeline shall be designed to withstand internal design pressures and the superimposed loads of the roadway and traffic. 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.
- (b) Underground crossings in interchanges, where access to the Utility may be gained from the minor road without violation of limited access principles, shall be installed with sufficient strength casing to preserve the structural integrity of the paving and structure.
- (c) All piping must comply with the appropriate Federal and State regulations in effect at the time of construction.
- (d) Since aerial crossings usually may not be accomplished without work inside the limited access facility, such crossing between interchanges should be minimized. Where necessary to construct a crossing between interchanges on an operational facility, a comprehensive plan for temporary supports and handling traffic must be presented as part of the application.

No temporary supports will be permitted within thirty (30) feet of the main roadway unless placed behind existing guardrail or incorporated within an approved barrier system.

No work of any type, in connection with the construction of this project, will commence without prior notification of the local DOT Maintenance Office or Resident Engineer and the local Florida Highway Patrol.

Traffic control shall be done in accordance with the MUTCD and Standard Indexes, warning signs shall be placed at appropriate distances each side of the work area based upon the posted speed of the highway and recommendations of the Maintenance or Resident Engineer.

Flaggers will be posted to warn oncoming motorists when stringing conductors across the roadway.

The entire crossing should be completed in less than three (3) days.

At no time will either the pulling ropes or the conductor be less than twenty-five (25) feet above the roadway and at no time will the conductors be energized during the construction.

See Exhibit 'D' for example methods of stringing conductors across various highways.

- (e) Where an utility already exists within the proposed right-of-way of a Freeway and it can be serviced, maintained and operated without access from the 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 the Freeway. Otherwise, it must be relocated, except that in special cases such installations may be permitted under strictly controlled conditions. However, in each such special case the Utility Agency/Owner must show that:
  - (i) The accommodation will not adversely affect the safety, design, construction, operation, maintenance, stability, or future use of the freeway
  - (ii) Any alternative location would be contrary to the public interest. This determination would include an evaluation of the direct and indirect environmental and economic effects which would result from the disapproval of the use of such right-of-way for the accommodation of such utility.

In those special cases, where existing utility supports, manholes, or other appurtenances are located in medians or interchange areas, access to them from through-traffic roadways or ramps may be permitted, but only by permits issued by the Department to the Utility Agency/Owner setting forth the conditions for enforcement and other controls to protect highway users.

Exceptions for existing utilities must be approved by the State Transportation Engineer.

All new longitudinal installations on limited access rights of way will be in accordance with the Department's Policy No. 000—710-OO1--a entitled "***A Policy on the Accommodation of Utilities on Limited Access Rights of Way***", Exhibit I.

- (f)** 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 with road users.
- (g)** Where a utility follows a crossroad or street which is carried over or under a Freeway, provisions should be made for the utility to cross the Freeway on the locations of the crossroad or street in such manner that the utility can be serviced without access from the through-traffic roadways or ramps. Where distinct advantage and appreciable cost saving is affected by location the utilities outside the right-of-way of the crossroad or street they may be so located.
- (h)** Except for necessary crossings, water canals and irrigation ditches should be excluded from the right-of-way of Freeways, except for special cases as covered by 4.B(2). Crossings may be made by underground siphon, or through culverts, or bridges as appropriate to the size of canal, topographic conditions, and highway safety aspects. In general, locations and structures are to be designed in the same manner as are facilities for natural transverse drainage. All access and egress for servicing or patrolling such facilities shall be from outside the control of access lines.
- (i)** When existing utilities are relocated or adjusted in conjunction with construction of a Freeway, provisions may be made for known and planned expansion of the utility facilities, particularly those underground. They should be planned to avoid interference with traffic at some future date when additional or new overhead or underground lines are installed.
- (j)** Access for servicing a utility along or across a Freeway should be limited to access via:

  - (i)** Frontage roads where provided
  - (ii)** Nearby or adjacent public roads and streets
  - (iii)** Trails along or near the highway limited access right-of-way lines, connecting only to an intersecting road, from any one or all of which entry may be made to the outer portion of the Freeway right-of-way.

(3) OTHER SYSTEMS:

- (a) When casing is used for crossings of flammable gases or fluids, the casing should extend to the toe of the front slope and shall be vented at or outside of the right of way line. Welded steel pipelines transmitting gas or liquid petroleum may be installed without encasement provided such pipeline conforms with 49 CFR, Part 192, Transportation of Natural Gas by Pipeline, or Part 195, Transportation of Liquids by Pipeline, as applicable. The pipeline shall be designed to withstand internal design pressures and the superimposed loads of the roadway and traffic.
- (b) Casing will be required for crossings of underground utilities where the carrier conduit is of insufficient strength due to composition or depth of cover.
- (c) Casing will be required for crossings jacked under existing pavement where the carrier is of composition such that it cannot be jacked.
- (d) Where it is necessary to place aerial crossings which will interfere with traffic, careful planning of work with regard to the safety of vehicular traffic is mandatory. No temporary supports will be allowed closer than the minimum clearance under Section 8, unless incorporated with approved barrier system or other approved work zone traffic control devices.

No work of any type, in connection with the construction of this project, will commence without prior notification of the local DOT Maintenance Office or Resident Engineer and the local Florida Highway Patrol.

Traffic control shall be done in accordance with the Manual on Uniform Traffic Control Devices. Warning signs shall be placed at appropriate distances each side of the work area based upon the posted speed of the highway and recommendations of the Maintenance or Resident Engineer.

Flaggers will be posted to warn oncoming motorists during the entire crossing operation.

The time required to install guard poles, guard rails, pull-in conductors, tension and clip-in conductors, remove guard poles, guard rails, fill holes and replace sod will vary depending upon the type, size, weight, and number of conductors in a bundle for each phase, but shall not exceed seven days.

Such temporary construction shall be completed in the minimum amount of time possible as approved in the permit.

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

(4) PAVEMENT CUTTING:

- (a) Open cutting of existing pavement and existing driveway connections generally will not be allowed, but may be considered under certain conditions, such as subsurface obstructions, limited space for jacking, high water table, roadwork is funded, substandard roadway surface, or alternatives are unreasonably costly to the public.
- (b) Open cutting of existing driveway connections (if paved) will be permitted, provided that for the convenience of the users, the users are notified and pavement is restored in accordance with this guide. (Notification may be accomplished by the use of a door - hanger type notice, or onsite signage, as appropriate and approved by the Department.)

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

- (c) Where open cutting has been permitted, replacement of fill, base and surface will be in accordance with this guide, the latest Department of Transportation Specifications and/or special provisions of the permit. Before traffic is to be placed on a cut area, a temporary patch with a smooth all-weather surface must be provided. Refer to Exhibit E.

C. Attachments to Structures (Exhibit G)

- (1) General: If any of the following conditions are created by the attachment to a structure, the attachment will not be approved:
  - (a) an obvious hazard to the Public will be created,
  - (b) the integrity of the structure will be affected,
  - (c) State Maintenance Operations will be unreasonably hindered, or
  - (d) aesthetics of structures which are located in aesthetically sensitive environments will be adversely affected.

If the applicant desires to attach a utility to a structure, then the above listed justifications must be stated in writing along with permit application.

Details of utility attachments including loads, attachment positions, details, plans, specifications and corrosion certification forms will be prepared by or prepared under the responsible supervision, direction and control of a qualified Professional Engineer registered in the State of Florida, unless exempt from registration under Chapter 471, Florida Statutes. These plans and specifications shall be signed and sealed by the Engineer, and the information suitable for documentation in the National Bridge Inspection System file.

Permits for installation onto existing structures shall be reviewed by the District Structures Engineer and approved by the District Maintenance Engineer. Development of construction plans for the accommodation of utilities onto structures to be constructed shall be the responsibility of the Designer. Comments from the District Structures Engineer must be coordinated into the design process. The Designer shall coordinate the plan development process with the District Maintenance Engineer. All details of the utility accommodation shall comply with the "Utility Accommodation Guide".

- (2) **RESPONSIBILITY:** The Utility Agency/Owner is totally responsible for the design, safety and maintenance of its facilities and supporting hardware accommodated onto state owned bridge structures. If the Department determines that the utility will be accommodated, the Department is then responsible to determine that the Utility Agency/Owner has complied with the "Utility Accommodation Guide" and 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 Department is the final authority in all disputes that may possibly develop.

The Utility is advised to review the five year and ten year work programs to determine if an existing bridge will be replaced or widened.

- (3) CRITERIA: Where attachments are permitted, the following criteria must be met as conditions of issuing the permit:
- (a) Designs for utility attachments shall be in compliance with all applicable Federal, State and Local Regulations, Rules and Codes.
  - (b) No construction or maintenance will be accomplished upon a structure without written approval from the local Maintenance Engineer. The Utility Agency/Owner or its contractors working within state rights of way shall comply with the MUTCD and Standard Indexes. In cases of bona fide emergencies, maintenance can proceed after verbal approval from the local Maintenance Engineer or after reasonable attempts to attain such approval have failed.
  - (c) Utilities attached to bridge structures shall maintain a vertical clearance at least equal to that of the structure.
  - (d) Attachments onto bridge structures located in corrosive coastal areas 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. Bridges located in corrosive coastal areas are those that are located over water having a total chloride level of at least 6,000 ppm. A determination as to whether or not a bridge structure is located in a corrosive coastal area can be acquired from the District Structures Engineer. Utilities attached to structures located in other areas of the State may be attached with any approved materials (see 4.C. (5) Materials).
  - (e) 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 corrosive coastal areas shall be fabricated from non-metallic materials or other equal materials as determined by the State Corrosion Engineer. Coastal corrosive areas are defined in (d) above.
  - (f) All electrical cables 2 kv and above shall be shielded cable with an insulated concentric neutral and grounded at one end of the bridge.
  - (g) 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.

- (h) 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.
- (i) Utility attachments should be designed to pass through the backwall of the abutment when practicable. Pipe may be routed around the abutment when the abutment backwall design prohibits pass through due to dimensional constraints, thickness, material composition or reinforcement. The permittee will consult with the local Maintenance Engineer and the District Structures Engineer concerning the Department's requirements at each site. See also paragraph 4.C. (7) concerning thermal expansion.
- (j) All pressure lines shall have shut-off systems so that the pipe segment at the bridge can be isolated.
- (k) 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 flanged joints and conforming to API Standard 5L with a longitudinal joint factor (E) equal to 1.0 shall be used. The minimum wall thickness shall not be less than the values presented in the following table:

Pipe Diameter In Inches	Pipe Wall Thickness In Inches
3/4	.154
1	.179
1-1/4	.191
1-1/2	.200
2	.218
3	.216
4	.237
6	.280
8	.322
10	.365
12	.375
14 (practical size limit)	.375

Accommodation of pipes transmitting hazardous materials with line pressures in excess of 250 psi gage should be reviewed in light of the added safety concerns. A 250 psi gage pressure is the suggested upper limit of line pressure for attachment to bridge structures. When a bona fide hardship exists, consideration may be given to accommodating transmission lines with pressures exceeding 250 psi gage pressure.

- (4) LOCATION: Utilities should be located underneath the cantilever portion of the bridge structure deck overhang. If unique circumstances exist, attachment to the deck underside at other locations could be considered. 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) MATERIALS: All materials to be used for Utility conduit, pipe, coatings and concrete repairs shall be approved by the Department's Bureau of Materials and Records in Gainesville, Florida. As materials are approved, they will be placed on the Qualified Products List. Selection of material type is governed by project location as defined in Section 4.C. (3), Criteria, (d) and (e). Conduits shall be supported so that long term deflection between supports, when fully loaded, shall not exceed 5/8 inch. Examples of approved conduits for utility cables or conductors for outdoor exposure locations are stated as follows;

Fiber Reinforced Epoxy (FRE) Rigid Conduit which is listed by Underwriters Laboratories Files E-53373, E-78442 and conforms to the National Electrical Code Section 346.1;

Polyvinyl Chloride (PVC) Rigid Conduit schedule 40 or 80 which conforms with Underwriters Laboratories Section 651, the National Electrical Code Section 347 and National Electric Manufacturers Association TC-2. For conduit supporting only communication cables, Polyvinyl chloride "D" duct is acceptable which meets or exceeds National Electric Manufacturers Association TC-10.

Examples of approved pipes for pressurized lines are as follows:

- (a) Cast iron
- (b) Ductile iron
- (c) Steel

Coatings for all pipes shall be applied in compliance with Exhibit G.

All Utility supporting hardware shall be constructed of the same metal material. No combinations of dissimilar materials will be allowed (threaded inserts included) unless the materials are separated by flanged bushings constructed from non-conductive materials. Supporting hardware is defined to mean any and all threaded inserts, bolts, nuts, washers, hangers, or brackets. Approved materials for supporting hardware are as follows: Alloy 6061 T6 Aluminum; 316 Stainless steel; Hot dipped galvanized steel in accordance with ASTM Specifications, Structural Shapes A-123; Hardware A-153; Bolts A-307, or other equal materials as determined by the State Corrosion Engineer. All support metal devices, except stainless steel, shall have a minimum thickness of 3/16 inch. The use of threaded inserts cast into the concrete or retrofitting with adhesive anchors are required to attach the Utility to the bridge deck. The use of expansion anchors is prohibited.

- (6) **CORROSION MITIGATION:** All attachments to bridge structures shall be designed to minimize any danger of corrosion activity by stray current flow into the structure from the Utility. The Utility shall be encased in a conduit constructed of nonconductive material or shall be separated from the supporting hardware by an insulating roller or other nonconductive material. See paragraph 4.C. (3)(h). All bolts entering the bridge structure should be separated from supporting brackets by the use of flanged insulating bushings or redundancy accomplished by other means.

Metallic Utility pipes shall be supported on insulating rollers or other nonconductive material. Utility pipes transporting fluids and using mechanical joints shall be equipped with joint restraints. Use of pipe couplings, other than expansion couplings (expansion joints), shall be avoided on bridge structures. If pipe couplings are used, restraint shall be provided to prevent pipe movement at the coupling and the pipe system shall be

designed to restrict all movement to expansion couplings. All gas lines or other cathodically protected lines shall be equipped with both insulating joints and electrical test leads at both ends of the bridge.

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

Expansion joint details shall indicate joint opening setting which compensate for temperature at the time of installation.

- (8) APPROVAL: The approval process for utility accommodation onto bridge structures is defined in Section 2.C.

## 5. SPECIAL REQUIREMENTS FOR INSTALLATION, RESTORATION OF RIGHT OF WAY AND MAINTENANCE OF UTILITY

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, 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 right of way where work is authorized by the permit. All Department of Transportation properties shall be restored to their original condition as far as practical, in keeping with the Department of Transportation Standard Specifications, and in a manner satisfactory to the Department of Transportation. The following guidelines are established for this purpose:

- A. All necessary signs, flaggers and other safety devices will be used in accordance with the Manual on Uniform Traffic Control Devices, MUTCD, see Rule 14-15.010, FAC, and Department Roadway and Traffic Design Standards-Index Series 600.
- B. At any and all open cut crossings, a minimum of one-way traffic will be

traffic will be maintained during the daylight hours and two-way traffic at night. All traffic detours should be restricted to the limits of Department of Transportation right of way with necessary flagmen and marking devices. Detour of traffic outside of Department of Transportation right of way will be considered with the approval of local Governmental Agencies involved. These detours, including the traffic control plan, will be approved by the local Maintenance Engineer.

- C. All affected side drains, side ditches and storm sewers will be identified and referenced as to grade and location prior to construction.
- D. At each open cut crossing, the backfill material shall be placed and compacted per Exhibit E. This requirement holds for embankment, subgrade and base. The density determinations can be made by, the permittee if qualified, or a certified laboratory under the supervision of the permittee's consultant. A copy of all density test reports shall be furnished to the Department of Transportation.
- E. Two drawings, Exhibit E, show proper replacement when open cut is allowed. Additional paving may be required.
- F. 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 will be notified twenty-four (24) hours prior to application of the permanent patch. The permittee will be required to maintain the patch for a period of one (1) year.
- G. Shoring will be required to conform with OSHA requirements where necessary to protect existing pavement.
- H. Excavated material in excess of the quantity required for backfill in Department of Transportation rights of way and considered usable by the Department, shall be hauled by the permittee, at his cost and expense, a maximum distance of three (3) miles from the trench excavation and stockpiled in those areas as directed by the Department of Transportation. Excess excavated material considered unusable by the Department shall be disposed of at the permittee's expense unless otherwise directed by the Department of Transportation. This paragraph does not apply to material contaminated with hazardous waste or pollutant.
- I. All correspondence regarding construction procedures will be handled directly with the permittee and not through the permittee's consultants, contractors or subcontractors.
- J. At such locations where Department of Transportation signs and reflectors will interfere with proposed construction, the permittee will notify the local Maintenance or Resident

Engineer forty-eight (48) hours in advance of starting work. All signs and reflectors will be moved or relocated by Department of Transportation forces. Any signs or reflectors damaged, destroyed, removed or relocated will be replaced by the Department of Transportation at the expense of the permittee.

- K. All trees and shrubbery damaged or disturbed during construction shall be replaced by the permittee at his expense as directed by the Maintenance Engineer or Resident Engineer.

Any plants that have been planted by Property Owners shall be removed and replaced to the satisfaction of the local Maintenance or Resident Engineer. All debris shall be removed by the permittee at his expense.

- L. Grassing and mulching operations are to begin within three (3) weeks after utility is installed except in cases of front and back slopes which should be done immediately. All requirements regarding grassings and mulching will be in accordance with the Department of Transportation Standard Specifications. Any yard or part of right of way in front of private property that has a grass mat that will be resodded with like sod, or otherwise to the satisfaction of the local Maintenance or Resident Engineer. The permittee shall maintain that portion of the right of way affected by the permit installation until acceptable vegetation is established.

## 6. MAINTENANCE OF VEGETATION

Maintenance of vegetation includes any method or technique intended to alter or regulate the normal growth of vegetative plant materials. Techniques of manual or mechanical methods or the use of herbicides or plant growth regulators may be allowed on a site specific basis.

Vegetation is defined as all trees, shrubs, vines, legumes, grasses or other plant material existing within and adjacent to the Department's right of way. 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. Except for tree trimming in 6.A., the removal, cutting, marring, defacing, or destruction of any vegetation within the Department's right of way is prohibited unless authorized by the Department. A twenty four (24) hour minimum notice shall be given to the respective local Maintenance Engineer prior to the performance of operations.

- A. 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, providing such trimming is performed in accordance with

recognized and approved principles of modern arboriculture methods with emphasis on tree health. Such trimming shall not damage trees and shrubs that are intended to remain in the work area. All waste and debris associated with the trimming shall be removed from the right of way unless otherwise approved in writing.

- B. **REMOVAL OF VEGETATION:** Manual or mechanical cutting of vegetation will be permitted on a routine or periodic basis, providing that the limits of work do not extend beyond the limits necessary for the proper maintenance of the utility facility. Grasses shall be mowed or cut at a minimum height of not less than six (6) inches and in such a manner as to promote low growing ground cover species. Areas dominant in brush may be cut as close to the ground line as practical. Mowing equipment shall be so equipped and operated in a manner to preclude the throwing of debris that would create a safety hazard. Brush cuttings or debris discharged into the routine maintained limits of the right of way shall be removed.
- C. **CHEMICAL CONTROL OF VEGETATION:** The use of herbicides or plant growth regulators for the purpose of chemically maintaining vegetation may be approved by the local Maintenance Engineer on a site or location specific basis. Authorization for chemical control will be considered on an individual basis and shall not be interpreted as authorization to extend beyond the specified limits or the provisions of the work. All requests shall be submitted in a written proposal that outlines the extent of the proposed work, the type of herbicides or plant growth regulators including labels and material safety data sheets that are proposed to be used, and the intended timing and techniques of application.

When the use of herbicides is permitted for control of vegetation, liability for damage to adjacent property and the Department's right of way rests solely and entirely with the Utility Agency/Owner. The use of herbicides will be authorized only if they are applied as a part of a definite scheduled program intended to control undesirable tree and brush growth. Applications shall be in a manner that will not cause the initial overall browning of vegetation on any area to recur. The initial application will be followed by periodic, selective or spot treatments until undesirable tree and brush growth has been replaced by low growing ground covers. No application will be permitted on vegetation greater than three 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 three foot height. In no case will applications be allowed at a height of greater than six feet. 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 three feet.

Locations with exceptional rapid plant growth conditions may be exempted providing the dead plant material is removed following successful performance of the herbicide.

Herbicide applications that indiscriminately kill grass or other desired vegetation will not be permitted. Uncontrolled or indiscriminate use of highly residual or nonselective herbicides or the use of restricted use herbicides will not be permitted. Application of herbicides that are harmful to existing grasses, legumes or other low-growing ground cover plants will not be allowed on:

- (1) Highway cut or fill slopes where such vegetation has been planted or has been established naturally;
- (2) Highway shoulders and slopes between the pavement surface and the established Department mowing limits;
- (3) Other areas where it is evident that mowing is done as a part of routine roadside maintenance or locations where such applications would be of detriment. Applications that are conducive to the non-selective control of vegetation or that will produce undesired bare ground will not be permitted. Individual stem and solid stream treatments that result in spot or narrow band control may be permitted providing that field conditions and adjacent land use are compatible to such treatments. Where specific plants have been selected and preserved, they shall be protected against damage by the herbicide treatment of adjacent vegetation. Careless or excess applications will not be tolerated. Special precautions must be taken with all herbicide applications to ensure that they are made in accordance with all environmental considerations and associated regulations.

Personnel shall be trained, experienced, and competent in the particular type of work they are engaged in and licensed according to applicable 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 shall be maintained by the Utility Agency/Owner and provided to the Department upon request.

Authorization to control vegetation chemically must be secured in advance, in writing, with twenty-four (24) hour minimum notice given to the respective local Maintenance Engineer prior to the application of chemicals. Misuse or unsatisfactory performance results or failure to comply with these provisions will be sufficient cause for the denial of future use of chemicals for vegetation control.



## 7. MAINTENANCE OF TRAFFIC

### A. Background:

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

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

Part VI of the Manual on Uniform Traffic Control Devices (MUTCD) is the national standard for all traffic control devices used during construction, maintenance and utility activities. Florida has adopted this manual as the State Standard to be used on all streets and highways open to the public. As a supplement to this manual Florida publishes Roadway and Traffic Design Standards (Index Series 600) for Maintenance of Traffic.

### B. Traffic Control Plan

When a permit for utility installation, adjustment or maintenance activity is required under Section 2 of the guide, a traffic control plan must be submitted either with the permit application or at least 2 working days (48 hours) before on-site work. The traffic control plan shall be designed in accordance with the standards set forth in the MUTCD.

### C. Training

Each person supervising the selection, placement and maintenance of Traffic Control Devices in Utility Work Zones shall be formally trained in traffic control through work zones.

The training course shall have been approved by DOT or comply with MUTCD Standards, as amended, and the DOT latest roadway and traffic design standards.

### D. Job Control

Each job location shall have a person in responsible charge of traffic control through the area covered by the permit. This person shall be qualified by appropriate training as indicated in 7.C.

E. Non-Compliance

Upon notification by the Department of deficiencies in the Traffic Control Plan or other matters involving traffic safety, the permittee shall immediately make improvements as directed by the Department. Should the Department deem conditions to be such that imminent danger is present, all work shall cease automatically until the conditions are improved.

8. LOCATION CRITERIA FOR UTILITIES (Exhibit C)

A. Rural and Urban Freeways and Rural Arterials and Collectors--  
- Design Speed of 45 MPH or Greater and Projected ADT (20 YR.) of 1500 or Greater:

- (1) LIGHT POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".
- (2) UTILITY POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".
- (3) PARALLEL (UNDERGROUND): Exhibit I, Accommodation of New Utilities on Limited Access Right of Way, requires prior approval of the District Secretary for Freeways, otherwise the District Maintenance Engineer.
- (4) CROSSING (AERIAL): Aerial crossings requires twenty-four (24) feet minimum vertical clearance over the roadway. Other Governmental Agencies or Codes may require a greater clearance for certain voltages. The greater clearance required prevails as the rule. No poles or structures will be permitted within right of way of the main travel way.
- (5) CROSSING (UNDERGROUND): Underground crossings require a minimum vertical clearance forty-eight (48) inches below pavement surface for Freeway and thirty six (36) inches for other highways, or thirty (30) inches below unpaved ground including ditch grade. After pavement has been constructed, no open cuts will be allowed. Where a high pressure gas or volatile fuel line is located under a highway bridge, additional protection may be necessary. The type of additional protection may vary depending upon the circumstances and each individual case will be analyzed on its own merits. (See Jacking and Boring Supplement-Exhibit F)

B. Rural Arterials and Collectors --- Speed of 45 MPH or Greater and Projected ADT (20 YR.) Less Than 1500:

- (1) LIGHT POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".
- (2) UTILITY POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".

- (3) PARALLEL (UNDERGROUND): Parallel underground installations require a minimum vertical clearance thirty-six (36) inches below top of pavement or thirty (30) inches below existing unpaved ground including ditch grade except for gas lines, which should be thirty-six (36) inches below ground including ditch grade. In rural areas normally not between edge of pavement and toe of slope and as near right of way line as practical. Minimum depth requirement can vary if Utility is buried under sidewalk or bike path.
- (4) CROSSING (AERIAL): Aerial crossings are permitted a minimum of eighteen (18) feet vertical clearance over the roadway. Other Governmental Agencies or Codes may require a greater clearance for certain voltages. The greater clearance required prevails as the rule.
- (5) CROSSING (UNDERGROUND): Underground crossings require a minimum vertical clearance of thirty-six (36) inches below top of pavement or thirty (30) inches below unpaved ground line including ditch grade. (See Jacking and Boring Section-Exhibit F)

C. Rural Collectors --- Design Speed of 40 MPH or Less and Rural Locals (All Speeds):

- (1) LIGHT POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".
- (2) UTILITY POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".
- (3) PARALLEL (UNDERGROUND): Parallel underground installations require a minimum vertical clearance thirty-six (36) inches below top of pavement or thirty (30) inches below existing unpaved ground including ditch grade, except for gas lines, which should be thirty-six (36) inches below ground including ditch grade. In rural areas normally not between edge of pavement and toe of slope and as near right of way line as practical. Minimum depth requirement can vary if Utility is buried under sidewalk or bike path.
- (4) CROSSING (AERIAL): Aerial crossings are permitted a minimum of eighteen (18) feet vertical clearance over the roadway. Other Governmental Agencies or Codes may require a greater clearance for certain voltages. The greater clearance required prevails as the rule.
- (5) CROSSING (UNDERGROUND): Underground crossings require a minimum vertical clearance of thirty-six (36) inches below top of pavement or thirty (30) inches below ground line including ditch grade. (See Jacking and Boring Section-Exhibit F)

D. Urban Arterials and Collectors --- Design Speeds of 30-50 MPH (Without Curb and Gutter):

- (I) LIGHT POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".

- (2) UTILITY POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".
- (3) PARALLEL (UNDERGROUND): Parallel underground installations require a minimum vertical clearance thirty-six (36) inches below top of pavement or thirty (30) inches below existing unpaved ground including ditch grade except for gas lines, which should be thirty-six (36) inches below ground including ditch grade. In rural areas normally not between edge of pavement and toe of slope and as near right of way line as practical. Minimum depth requirement can vary if utility is buried under sidewalk or bike path.
- (4) CROSSING (AERIAL): Aerial crossings are permitted a minimum of eighteen (18) feet vertical clearance over the roadway. Other Governmental Agencies or Codes may require a greater clearance for certain voltages. The greater clearance required prevails as the rule.
- (5) CROSSING (UNDERGROUND): Underground crossings require a minimum vertical clearance of thirty-six (36) inches below top of pavement or thirty (30) inches below unpaved ground line including ditch grade. (See Jacking and Boring Section-Exhibit F)

E. Urban Arterials and Collectors --- Design Speed of 45 MPH or Less (Curb and Gutter)

- (1) LIGHT POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".
- (2) UTILITY POLES: See Exhibit C, Standard Index No. 700, "Design Criteria Related To Highway Safety".
- (3) PARALLEL (UNDERGROUND): Parallel underground crossings require a minimum vertical clearance of thirty-six (36) inches below top of pavement or thirty (30) inches below existing unpaved ground including ditch grade except for gas lines, which should be thirty-six (36) inches below ground including ditch grade. In rural areas normally not between edge of pavement and toe of slope and as near the right of way line as practical, Minimum depth requirement can vary if utility is buried under sidewalk or bike path.
- (4) CROSSING (AERIAL): Aerial crossings are permitted a minimum of eighteen (18) feet vertical clearance over the roadway. Other Governmental Agencies or Codes may require a greater clearance for certain voltages. The greater clearance required prevails as the rule.
- (5) CROSSING (UNDERGROUND): Underground crossings require a minimum vertical clearance of thirty-six (36) inches below top of pavement or thirty (30) inches below unpaved ground line including ditch grade. (See Jacking and Boring Section-Exhibit F)

## 9. GENERAL REQUIREMENTS

- A. Devices such as signal-strain poles, fire hydrants, down guys, telephone load pedestals and other items whose construction and size would cause extensive damage to a vehicle if struck are to be located according to the standards for utility poles. See Department Standard Index 700 for location criteria.
- B. For the purpose of this guide, frangible base poles will be accepted if in accordance with the Department Roadway and Traffic Standards-Index Numbers 17500 and 17501.
- C. On projects where the four (4) foot minimum offset would place the Utility or other obstruction in substantial conflict with the sidewalk and in the case of power poles, would create an unreasonable conflict with requirements of the National Electrical Safety Code and other alternatives are deemed impractical, the minimum may be reduced to two and one-half (2 1/2) feet from the face of the curb. Each case where this deviation is proposed must be supported on an individual basis and approved by the District Maintenance Engineer and by FHWA if on any project constructed or improved with Federal Aid Funds.
- D. Where possible, excavation will not be allowed within eight (8) feet of the edge of the pavement. See Jacking and Boring Section for exceptions. (Exhibit F)
- E. All Utilities shall comply with appropriate State and Federal Regulations in effect at the time of construction.
- F. These 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.
- G. The roadside clearances for above ground utility facilities shall be consistent with those clearances applicable to other roadside obstacles on the type of highway involved, reflecting good engineering and economic considerations.
- H. Where feasible and practical, luminaries should be attached to utility poles which otherwise meet the offset criteria, thereby eliminating unnecessary numbers of poles along highway facilities.
- I. Manholes shall be outside the traveled lanes, to the greatest extent possible. The manhole ring, cover and pad must support the traffic for the area where it is being constructed and be finished flush with the existing grade.

- J. Abandoned underground lines shall be shown on the utility relocation plans. Removal shall be accomplished in accordance with the permit. Methods of abandonment are subject to approval by the District Maintenance Engineer. Abandoned underground gas lines shall be shown on the utility relocation plans and shall be abandoned in accordance with 49 CFR Part 192 and the rules of the Public Service Commission.
- K. All maintenance activities are required to meet this guide for safety and right of way restoration.
- L. Appurtenances
  - (1) Appurtenances should be aesthetically acceptable and in compliance with industry standards.
  - (2) Appurtenances shall be placed so as to provide minimum interference to the traveling public and DOT maintenance operations.
  - (3) Appurtenances must not conflict with other existing facilities.
- M. If any utility relocation is necessary to provide entrance to the roadway from adjacent property, the relocation expense should be borne by the secondary permittee and the permittee shall not interfere with the rights granted any prior permittee. If a dispute arises, the relocation expense should be considered a matter between the property owner and the prior permittee. In the case of an appeal, the final location will be determined by the Department. Consultation with the Public Service Commission's legal staff may be necessary in rare cases.
- N. With the exception of utility or single pole appurtenances mounted 15 feet or higher above the ground, appurtenances larger than eight (8) cubic feet must have their location and size, in cubic feet, shown on the permit.
- O. Underground appurtenances less than 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 30 feet from the edge of pavement shall be designed to support the Department's maintenance equipment. The minimum wheel load underground appurtenances should be designed for is 16,000 lb. This in no way guarantees the Utility Agency/Owner that these appurtenances will not be subject to greater loads.
- P. Installation of above ground appurtenances larger than 80 cubic feet and any size appurtenance which does not meet these guidelines must be submitted to the District Maintenance Engineer for action.

- Q. All new or replaced underground facilities within the right of way shall be detectable.

Note: The following are incorporated herein by reference, and may be obtained from the Department at no more than cost pursuant to Section 120.53(2) (a), Florida Statutes:

- (1) 49 CFR Part 192.
- (2) 49 CFR Part 195.
- (3) Department Roadway and Traffic Design Standards (also known as Standard Indexes).
- (4) Department of Transportation, Policy Statement: Accommodation of New Utilities on Limited Access Right of Way, 000-710-001-a, May 18, 1989.

## EXHIBIT A

### DEFINITION OF TERMS

Auxiliary Lane	The portion of the roadway adjoining the traveled way for parking, access ramps, speed changes, turning, storage or turning weaving, truck climbing or other purposes supplementary to through traffic movement.
Conduit	An enclosure for protecting wires and cables.
Contractor	The individual, firm or company, contracting with the Department to work or furnishing materials or in contract as a subcontractor for a prime contractor, firm or company.
Driving Lane	Any traffic lane, travel or auxiliary.
Freeway	A divided arterial highway with full control of access.
Inspector	An authorized representative of the local Maintenance or Resident Engineer.
Maintenance Paragraph Engineer	Department of Transportation Maintenance Engineer named in Three of the Utility Permit.
Manhole	An opening in an underground system which workmen or others may enter for the purpose of making installations, inspections, repairs, connections and tests.
Median	The portion of a divided highway or street separating the traveled ways for traffic moving in opposite directions.
Permittee	The Individual, Firm, Company or Governmental Agency identified as the permittee on the Utility Permit.
Relocation FDOT	The adjustment of utility facilities required by the highway project or Driveway Connection Permit, such as removing and reinstalling the facility, including necessary rights of way, on new location, moving or rearranging existing facilities or changing the type of facility, including any necessary safety and protective measures. It shall also mean constructing a replacement facility functionally equal to the existing facility, where



necessary for continuous operation of the utility service, the project economy, or sequence of highway construction or maintenance.

Resident Engineer	Department of Transportation Resident Engineer named in Paragraph Three of the Utility Permit.
Right of Way	A general term denoting land, property or interest therein usually in a strip, acquired for or devoted to transportation purposes. For permit purposes, the land which the Department has title to, or right of use, for the road and its structures and appurtenances, and for material pits furnished or to be furnished by the Department.
Travel Way	The portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.
Utility	All privately, publicly or cooperatively owned lines, facilities and system 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 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, inclusive of and wholly owned or controlled subsidiary.
Utility Facilities	All privately, or 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, storm water not connected with highway drainage and other similar commodities, including fire and police signal systems and street lighting systems, which directly or indirectly serve the Public or any part thereof.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
UTILITY PERMIT

Exhibit B

FORM 592.03  
UTILITIES  
05/90

(In compliance with Chapter 337, Florida Statutes)

DATE \_\_\_\_\_ PERMIT NO. \_\_\_\_\_

SUBJECT: Section \_\_\_\_\_ State Road \_\_\_\_\_ County \_\_\_\_\_

PERMITTEE \_\_\_\_\_

ADDRESS \_\_\_\_\_ Telephone Number \_\_\_\_\_

Requesting permission from the State of Florida Department of Transportation, hereinafter called the Department, to construct, operate and maintain

From MP/Station \_\_\_\_\_ to MP/Station \_\_\_\_\_

1. Proposed work is within corporate limits of a municipality. Yes ( ) No ( )  
Name of Municipality \_\_\_\_\_
2. Applicant declares that prior to filing this application he has ascertained the location of all existing utilities, both aerial and underground and the accurate locations are shown on the plans.  
A letter of notification was mailed on \_\_\_\_\_ to the following utilities/municipalities.  
\_\_\_\_\_  
\_\_\_\_\_
3. The office of the local Maintenance or Resident Engineer shall be notified twenty-four (24) hours prior to starting work and again immediately upon completion of work. The Engineer is located at Telephone Number \_\_\_\_\_
4. All work, materials, and equipment shall be subject to inspection by the local Maintenance or Resident Engineer and shall meet Department standards.
5. All Department property shall be restored to its original condition as far as practical, in keeping with Department specifications, and in a manner satisfactory to the Department.
6. All Installations shall conform to the Department's Utility Accommodations Guide in effect the date permit is approved.
7. Plans of this installation shall conform to the Department's Utility Accommodations Guide and shall be made a part of this permit.
8. This permittee shall commence actual construction in good faith within \_\_\_\_\_ days from the day of said permit approval and shall be completed within days. If the beginning date is more than 60 days from date of permit approval, then permittee must review the permit with the DOT Maintenance Engineer to make sure no changes have occurred in the highway that would affect the permitted construction.
9. The construction and maintenance of such utility shall not interfere with the property and rights of a prior permittee.
10. It is expressly stipulated that this permit is a license for permissive use only and that the piecing of facilities upon public property pursuant to this permit shall not operate to create or vest any property right in said holder.
11. Whenever necessary for the construction, repair, improvement, maintenance, safe and efficient operation, alteration or relocation of all, or any portion of said highway as determined by the District Director of Operations, any or all of facilities and appurtenances authorized hereunder, shall be immediately removed from said highway or reset or relocated thereon as required by the District Director of Operations and at the expense of the permittee unless reimbursement is authorized by separate agreement.
12. It is agreed that in the event the relocation of said utility facilities are scheduled to be done simultaneously with the Department's construction work, the permittee will coordinate with the Department before proceeding, shall cooperate with the Department's contractor to arrange the sequence of work so as not to unnecessarily delay the work of the Department's contractor, defend any legal claims of the Department's contractor due to delays caused by the permittees failure to comply with the approved schedule, and shall comply with all provisions of the law and Rule 14-46, Florida Administrative Code. The Permittee shall not be responsible for delays beyond its normal control.
13. Special conditions:  
\_\_\_\_\_  
\_\_\_\_\_
14. Special instructions:  
\_\_\_\_\_  
\_\_\_\_\_
15. 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, assume all risk of and indemnify, defend, and save harmless the State of Florida and the Department 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.
16. During construction, all safety regulations of the Department shall be observed and the holder must take measures, including placing and display of safety devices, that may be necessary in order to safely conduct the public through the project area in accordance with the Federal manual on Uniform Traffic Control Devices (MUTCD), as amended, and the Department's latest Roadway and Traffic Design standards.
17. In case of non-compliance with the Department's requirements in effect as of the approved date of this permit, 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 Department.

Submitted by: \_\_\_\_\_

Permittee

Place Corporate Seal

\_\_\_\_\_  
Signature and Title

\_\_\_\_\_  
Attested

'Waiver of Corporate Seal on File with the State of Florida Department of Transportation, Tallahassee, Florida. Yes ( ) No ( )

Roadway construction is proposed or underway, No ( ) Yes ( ) W.P.I. No. \_\_\_\_\_

Recommended for approval \_\_\_\_\_ Title \_\_\_\_\_ Date \_\_\_\_\_

Approved by \_\_\_\_\_ Date \_\_\_\_\_

District Permit Engineer or Authorized Representative

**EXHIBIT B  
(BACK)**

FORM 592-03  
Page 2  
12/55

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION

UTILITY PERMIT FINAL INSPECTION REPORT

DATE \_\_\_\_\_ Permit No. \_\_\_\_\_ COUNTY SECTION NO. \_\_\_\_\_  
STATE ROAD NO. \_\_\_\_\_ COUNTY \_\_\_\_\_ CITY \_\_\_\_\_  
PERMITTEE \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY \_\_\_\_\_ STATE \_\_\_\_\_ ZIP CODE \_\_\_\_\_  
TELEPHONE \_\_\_\_\_

DATE WORK STARTED \_\_\_\_\_

DATE WORK COMPLETED \_\_\_\_\_

INSPECTED BY \_\_\_\_\_

REMARKS: \_\_\_\_\_

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I the undersigned do hereby attest that the utility construction approved by the above numbered permit was installed in accordance with the permit requirements and in accordance with the Department's Utility Accommodation Guide.

SIGNED: \_\_\_\_\_

TITLE: \_\_\_\_\_

DATE: \_\_\_\_\_

cc: DISTRICT MAINTENANCE OFFICE

LOCAL MAINTENANCE OFFICE

# DESIGN CRITERIA RELATED TO HIGHWAY SAFETY

September 1989

TYPE OF FACILITY	RURAL & URBAN FREEWAYS AND RURAL ARTERIALS & COLLECTORS: DESIGN SPEED OF 45 MPH OR GREATER AND PROJECTED ADT (20 YR) OF 1500 OR GREATER	RURAL ARTERIALS & COLLECTORS: DESIGN SPEED OF 45 MPH OR GREATER AND PROJECTED ADT (20 YR) LESS THAN 1500	RURAL COLLECTORS: DESIGN SPEED OF 40 MPH OR LESS AND RURAL LOCALS-ALL SPEEDS	URBAN ARTERIALS & COLLECTOR DESIGN SPEEDS OF 30-50 MPH WITHOUT CURB AND GUTTER
EMBANKMENT SLOPE	Fill Mt. 0'-5' 6" to edge of CZ & 3'4" to edge of CZ & 3'4" > 20' 2" (with guardrail) R/W cost must be considered in urban areas in using these slopes.	Fill Mt. 0'-5' 6" except where R/W is insufficient then 6'4" to edge of CZ & 3'4" will be permitted. 5'-20' 6" to edge of CZ & 3'4" except where R/W is insufficient then 2'4" with guardrail will be permitted.	Fill Mt. 0'-5' 6" except where R/W is insufficient then 6'4" to edge of CZ & 3'4" will be permitted. 5'-20' 6" to edge of CZ & 3'4" except where R/W is insufficient then 2'4" with guardrail will be permitted.	Fill Mt. 0'-5' 6" except where R/W is insufficient then 6'4" to edge of CZ & 3'4" will be permitted. 5'-20' 6" to edge of CZ & 3'4" except where R/W is insufficient then 2'4" with guardrail will be permitted.
CLEAR WIDTHS FOR BRIDGES	Freeways, divided arterials & collectors (4 or more lanes): Travel lanes plus 10' Rt. and 6' Lt., 10' Lt. for 6' or more lanes. Undivided arterials & collectors: Travel lanes plus approach shoulder widths.	Travel lanes plus approach shoulder widths.	Travel lanes plus approach shoulder widths.	Divided: Travel lanes plus approach shoulder width Rt. and 6' Lt., unless full median section is carried across structure. Undivided: Travel lanes plus approach shoulder widths.
BACKSLOPES	4:1 (Normal)	4:1 where R/W permits or 3:1.	4:1 where R/W permits or 3:1.	4:1 where R/W permits or 3:1.
CLEAR ZONE (CZ)	Design Speed (mph): 60-70, 55, 45 Auxiliary Lanes (ft): 30', 24', 18' Travel Lanes (ft): 18', 14', 10' Shoulder (ft): 14', 10', 6'	Design Speed (mph): 60-70, 55, 45 Auxiliary Lanes (ft): 24', 18', 14' Travel Lanes (ft): 14', 10', 6' Shoulder (ft): 14', 10', 6'	Design Speed (mph): 40-55 Auxiliary Lanes (ft): 24', 18', 14' Travel Lanes (ft): 14', 10', 6' Shoulder (ft): 14', 10', 6'	Design Speed (mph): 30-50 Auxiliary Lanes (ft): 18', 14', 10' Travel Lanes (ft): 14', 10', 6' Shoulder (ft): 14', 10', 6'
GUARDRAIL LOCATION	Shoulder width plus 2' to face of guardrail (18' min.). May be desirable to locate on front slope; see Detail K, Index No. 400.	Shoulder width plus 2' to face of guardrail (18' min.). May be desirable to locate on front slope; see Detail K, Index No. 400.	Shoulder width plus 2' to face of guardrail (18' min.). May be desirable to locate on front slope; see Detail K, Index No. 400.	Shoulder width plus 2' to face of guardrail (18' min.).
SIGNS	Not generally in median. Outside clear zone or behind barrier that is justified for other reasons. Cantilever signs may be located inside clear zone protected by barrier. Frangible single column signs to be located in accordance with Traffic Design Standards Index No. 7302. All supports are breakaway or frangible except overhead cantilever or truss signs.	Outside clear zone or behind barrier that is justified for other reasons. Cantilever signs may be located inside clear zone protected by barrier. Frangible single column signs to be located in accordance with Traffic Design Standards Index No. 7302. All supports are breakaway or frangible except overhead cantilever or truss signs.	Outside clear zone or behind barrier that is justified for other reasons. Cantilever signs may be located inside clear zone protected by barrier. Frangible single column signs to be located in accordance with Traffic Design Standards Index No. 7302. All supports are breakaway or frangible except overhead cantilever or truss signs.	Outside clear zone or behind barrier that is justified for other reasons. Cantilever signs may be located inside clear zone protected by barrier. Frangible single column signs to be located in accordance with Traffic Design Standards Index No. 7302. All supports are breakaway or frangible except overhead cantilever or truss signs.
LIGHT POLES	Not generally in median except when shielded by barrier. Outside clear zone or frangible base 20' from edge of travel lane and 14' min. from edge of auxiliary lane or behind approved barrier that is justified for other reasons.	Outside clear zone for both frangible and non-frangible bases. If clear zone 20' or less. Desirably at 20' from edge of thru lane and 14' from edge of auxiliary lane or behind approved barrier that is justified for other reasons. Frangible bases may be placed at 20' from thru lane and 14' from auxiliary lane for clear zones greater than 20'.	Outside clear zone or behind approved barrier that is justified for other reasons.	Outside clear zone or behind approved barrier that is justified for other reasons. Frangible bases may be placed at 20' from thru lane and 14' from auxiliary lane for clear zones greater than 20'.
UTILITY POLES, FIRE HYDRANTS, ETC.	Not in median. Not within R/W of the main travel way of freeways. For other facilities outside the clear zone, normally 6.5' inside R/W when beyond clear zone otherwise as close as practical to R/W line.	Outside clear zone. Normally 6.5' inside R/W when beyond clear zone otherwise as close as practical to R/W line.	Outside clear zone. Not in median. Normally 6.5' inside R/W when beyond clear zone otherwise as close as practical to R/W line.	Outside clear zone. Not in median. Normally 6.5' inside R/W when beyond clear zone otherwise as close as practical to R/W line.
RAILROAD CROSSING DEVICES	Not on freeways. 10' min. from edge of travel lane or 6' min. from edge of auxiliary lane to near edge of device. No guardrail.	10' min. from edge of travel lane or 6' min. from edge of auxiliary lane to near edge of device. No guardrail.	Minimum from edge of travel lane to near edge of device: Greater than 45 mph-10', 35-45 mph - 8', 30 mph or less - 6'. Minimum for auxiliary lanes-6'. No guardrail.	Minimum from edge of travel lane to near edge of device: Greater than 45 mph-10', 35-45 mph - 8', 30 mph or less - 6'. Minimum for auxiliary lanes-6'. No guardrail.
MEDIAN WIDTHS	Freeways: 60 min., 60 mph and over; 47 min. when lanes added in median; 40 min. under 60 mph. Other divided highways: 40 min., 55 mph and over; 22 min. under 55 mph.	47 min. from edge of travel lane or 6' min. from edge of auxiliary lane to near edge of device. No guardrail.	22' Min.	19.5' min., 45 mph; 15.5' min., 40 mph or less (greater widths desirable). For reconstruction projects the min. painted median width with provision for left turn 40' (greater widths desirable).
TREES	Existing or Expected. 2" 4" Measure Above The Ground.	Outside clear zone. Desirable criteria recommended for freeways.	Outside clear zone.	Outside clear zone.

Design speed to be established using realistic anticipated operating speed.

Preferential cross sections are shown on pages 3-9 and 3-10 of the "Roadside Design Guide", 1988.

Consideration should be given to maintaining greater than the above specified clearances and/or flatter slopes where feasible and practical.

Values shown above shall be used on all new construction and on reconstruction projects to the extent that economic and environmental considerations and R/W. (historic new construction and reconstruction see "Manual of Uniform Minimum Standards For Design, Construction And Maintenance For Streets And Highways"). The values show Driving lane is any traffic lane, travel or auxiliary.

An auxiliary lane is the portion of the roadway adjoining the traveled way for parking, speed changes, turning, storage for turning, weaving, truck climbing or for other purposes supplementary to through traffic movement.

Traveled way (Travel lanes) is the portion of the roadway for the movement of vehicles, exclusive of shoulders and auxiliary lanes.

On projects where the 4 foot minimum offset cannot be reasonably attained and other alternatives are deemed impractical, the minimum may be reduced to 2.5'.

At locations where immediately adjacent development such as building, etc. provide less clearance, bridge piers can be placed to provide clearance less than 15'. Adequate crossing measurements at intersections should be provided.

Offsets shown are for existing or newly planted trees. If existing trees are close to but less than the minimum offset indicated, other factors should be considered to determine adequacy of offset, i.e. ADT, operating speed, accident history, size, age and type of tree; protection by a barrier, etc. Newly planted trees may be placed behind barriers that are provided for other reasons. The minimum setback distance from the base of concrete barriers, walls, abutments or other rigid obstructions is 4' for newly planted trees. For W-beam guardrail the minimum setback is 6' from the face of the rail for newly planted trees. Offsets shown apply to L and median for divided highways unless otherwise noted. When trees are placed in median adequate sight distance at intersections, turnouts and median openings, etc.):

- 10' minimum from driving lane when curb height is less than 6" or when curb height has been reduced by resurfacing.
- ◆ When offset established, care shall be taken to avoid backing sight distance to roadside signs.
- ◇ For divided facilities with curbed medians and undivided facilities utilizing curbed separations of crossings, 2.5' from face of curb to the edge of signal device in accordance with Traffic Design Standards Index No. 7882.
- ☆ Not less than 2' from edge of any shoulder pavement.
- ⊠ Avoid encroachment on adjacent private property. The 6.5' offset is to eliminate aerial encroachment.

**Clear Zone Footnotes:**

- ① Desirable values are to be used for all new construction projects. These values may be reduced only where fully justified by 100% utility justified to mitigate critical social, economic, and environmental impacts or to lessen excessive right-of-way costs. Desirable values are to be used for reconstruction projects; however, values less than desirable down to minimum may be used where fully justified due to critical social, economic, and environmental impacts and/or excessive right-of-way costs or when existing roadside obstacles are not considered hazardous as evidenced by field review and by accident history or accident potential.
- ② Where accident history indicates need, or where specific site investigation shows definitive accident potential, no zones for rural or facilities (without curb) may be adjusted on the outside of horizontal curves in accordance with Table 1 (S.M. 2-17-2).
- ③ The use of barriers or other safety treatment is to be considered if clear zone requirements are not provided.
- ④ 10' in median where median curb Type E is used on rural collectors with a design speed of 45 mph.
- ⑤ May be reduced to low speed condition criteria (30-40 mph) if conditions more nearly approach those for low speed.
- ⑥ May be reduced to 10' for collectors.
- ⑦ 10' in medians where median curb Type E is used; 4' from face of median curb where curb height is 6".
- ⑧ 4' from face of median curb where curb height is 6".
- ⑨ When a front slope steeper than 4:1 encroaches into the clear zone, a clear runoff area is to be provided at the bottom of the slope in accordance with Fig. 3.2 of the "Roadside Design Guide", 1988.

**DESIGN CRITERIA RELATED TO HIGHWAY SAFETY**

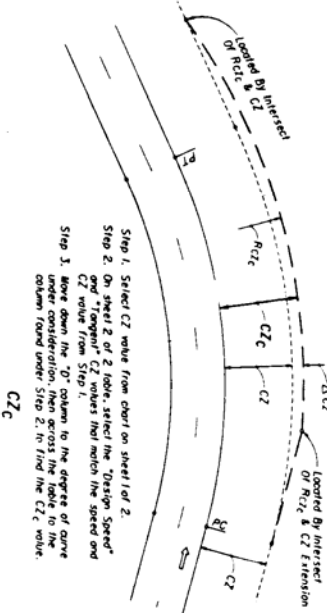
STATE OF TEXAS DEPARTMENT OF TRANSPORTATION  
HIGHWAY DIVISION

1 OF 2

700

CLEAR ZONE OF CURVED ALIGNMENT (  $CT_c$  ), FEET

Design Speed (mph) And Clear Zone (CZ, Feet)	30		35		40		45		50		55		60		65		70	
	D	TC	D	TC	D	TC	D	TC	D	TC	D	TC	D	TC	D	TC	D	TC
100mph	6	21	6	21	6	21	6	21	6	21	6	21	6	21	6	21	6	21
95	6	20	6	20	6	20	6	20	6	20	6	20	6	20	6	20	6	20
90	6	19	6	19	6	19	6	19	6	19	6	19	6	19	6	19	6	19
85	6	18	6	18	6	18	6	18	6	18	6	18	6	18	6	18	6	18
80	6	17	6	17	6	17	6	17	6	17	6	17	6	17	6	17	6	17
75	6	16	6	16	6	16	6	16	6	16	6	16	6	16	6	16	6	16
70	6	15	6	15	6	15	6	15	6	15	6	15	6	15	6	15	6	15
65	6	14	6	14	6	14	6	14	6	14	6	14	6	14	6	14	6	14
60	6	13	6	13	6	13	6	13	6	13	6	13	6	13	6	13	6	13
55	6	12	6	12	6	12	6	12	6	12	6	12	6	12	6	12	6	12
50	6	11	6	11	6	11	6	11	6	11	6	11	6	11	6	11	6	11
45	6	10	6	10	6	10	6	10	6	10	6	10	6	10	6	10	6	10
40	6	9	6	9	6	9	6	9	6	9	6	9	6	9	6	9	6	9
35	6	8	6	8	6	8	6	8	6	8	6	8	6	8	6	8	6	8
30	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7	6	7
25	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
20	6	5	6	5	6	5	6	5	6	5	6	5	6	5	6	5	6	5
15	6	4	6	4	6	4	6	4	6	4	6	4	6	4	6	4	6	4
10	6	3	6	3	6	3	6	3	6	3	6	3	6	3	6	3	6	3
5	6	2	6	2	6	2	6	2	6	2	6	2	6	2	6	2	6	2

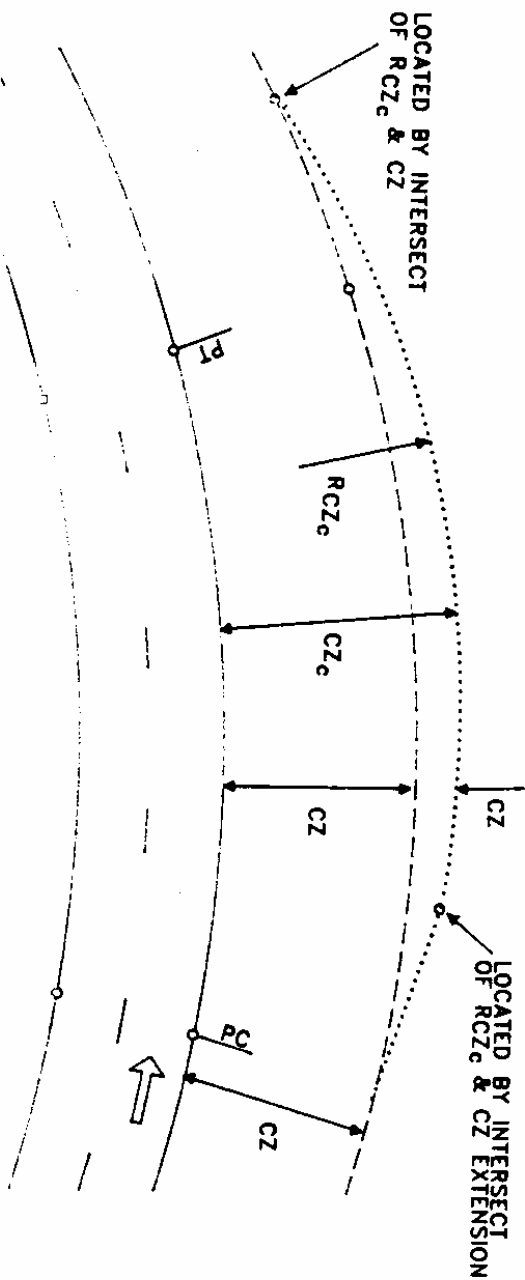


Step 1. Select  $CT$  value from chart on sheet 1 of 2.  
 Step 2. On sheet 2 of 2, look, across the "Design Speed" column for the design speed and down the "Clear Zone" column to find the  $CT_c$  value from Step 1.  
 Step 3. Move down the "TC" column to the degree of curve under consideration, then across the table to the column found under Step 2, to find the  $CT_c$  value.

STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION  
 ROAD DIVISION

**DESIGN CRITERIA RELATED TO HIGHWAY SAFETY**

Project No. 11-308  
 Sheet No. 2 of 2  
 Date: 7/00



- Step 1. Select CZ value from Chart on Sheet 1 of 2.
- Step 2. On Sheet 2 of 2 Table, select the "Design Speed" and "Tangent" CZ values that match the speed and CZ from Step 1.
- Step 3. Move down the "D" column to the degree of curve under consideration, then across the table to the column found under Step 2, to find the CZ value.

CZ<sub>c</sub>

INDEX NO. 700

## EXHIBIT D

Example procedures shown on this page and the following pages are only suggested methods used successfully in the past. Any procedure or equivalent method submitted to the area Maintenance Engineer will be considered for approval under individual circumstances of the roadway to be crossed.

### **EXAMPLE METHOD NO. 1**

#### **METHOD OF STRINGING CONDUCTORS ACROSS ROADWAYS OTHER THAN INTERSTATE OR ARTERIAL RIGHTS-OF-WAY WHERE INTERRUPTION TO HIGHWAY TRAFFIC WILL NOT EXCEED THREE MINUTES DURING OFF-PEAK HOURS OF OPERATION.**

If law enforcement agency who has jurisdiction over the location for the crossing agrees in advance to stop traffic while a pull rope is carried across the highway and stretched in the air 25' in height or more, this method may be utilized. Once the pull rope is in the air and secured, the law officer may allow traffic below to resume while the overhead conductors are pulled across the road with the pull ropes.

While this is a common method used for securing overhead conductors across a roadway, the method is strictly limited to locations where a brief interruption to traffic would not create a hazard.

### **EXAMPLE METHOD NO. 2**

#### **METHOD OF STRINGING CONDUCTORS AND TRAFFIC HANDLING FOR CROSSING FREEWAYS AND ARTERIALS**

The following method or equivalent method will be used for stringing conductors across Interstates, Freeways and Arterials where the weight of the conductors will safely permit the use of bucket trucks to pass and hold the conductors across and above the roadway, and protect the motoring public during the operation.

#### **ALL REQUIREMENTS SET FORTH IN SECTION 4.B. (2) (d) OR 4.B. (3) (d) SHALL BE MET WHEN INTERFERING WITH TRAFFIC.**

Two aerial bucket trucks will be used to make this crossing without any anticipated interruption to traffic in either direction. This operation will be accomplished in two stages in the following manner:

Phase I - South Bound Lane - Position one bucket truck, "Truck A", on the outside shoulder of the south bound roadway and one bucket truck, "Truck B", on the median shoulder of the

south bound roadway. A pull or bull rope is pulled from the structure west of the right of way line to "Truck A". The man in this bucket will coil sufficient rope in this bucket to reach across the south bound roadway. This bucket is raised and swung over the south bound lane meeting the bucket of "Truck B" over the center of the southbound road. The buckets of both trucks will then be raised to the maximum vertical position and a sufficient length of rope will be coiled in the bucket of "Truck B" to reach across the north bound roadway. "Truck B" will maintain its position maintaining maximum clearance over the roadway while "Truck A" moves through the nearest southerly interchange and to the north bound roadway and assumes position 2 on the median shoulder of the north bound roadway.

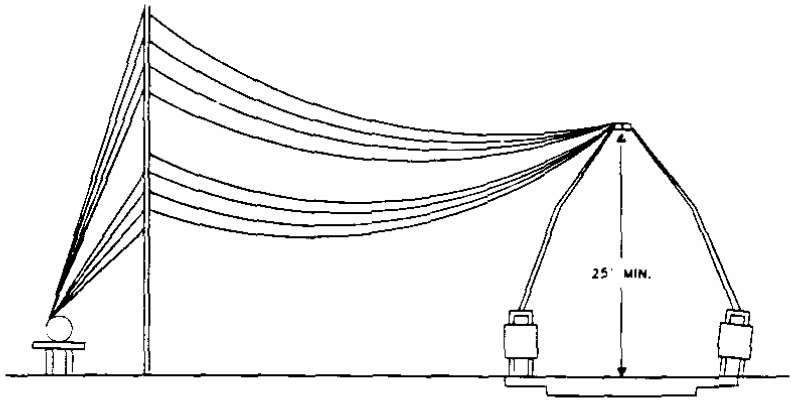
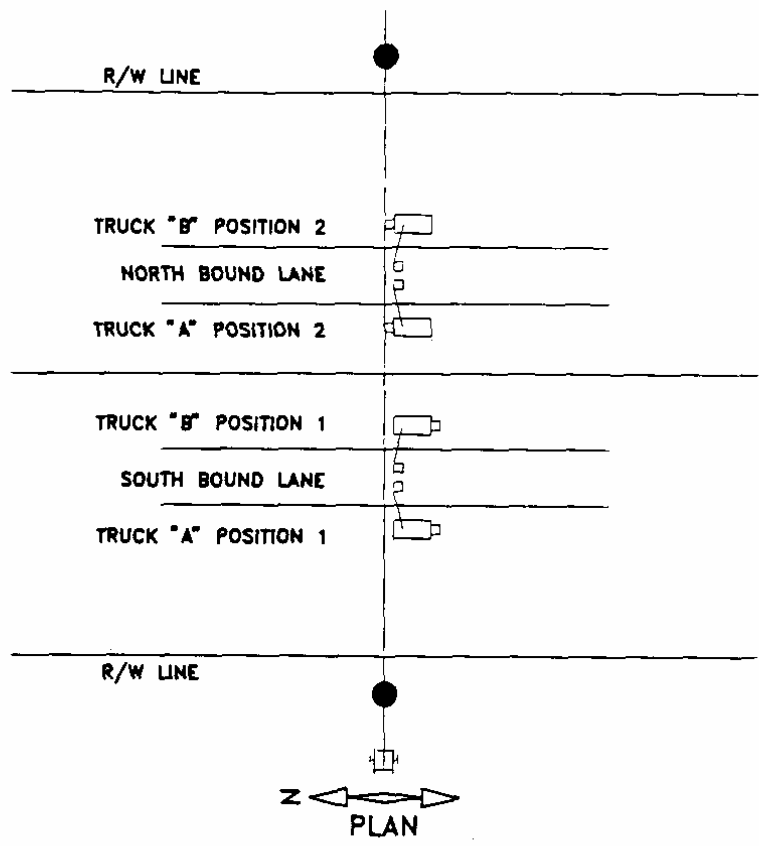
Phase II - North Bound Roadway -The same procedure as described under Phase 1 will be followed in this phase with the buckets of both trucks being brought together and the rope passed to "Truck B". The bucket of "Truck A" will maintain maximum clearance over the roadway while the bucket of "Truck B" is swung to pass the rope to the structure outside the east right of way line. The rope will be placed in sheaves on "Truck A" and the structures on each side of the roadway and pulled to sag condition.

One conductor and another rope will then be pulled, under tension through the sheaves, across the roadway. The second rope will be used to pull the second conductor and another rope across the roadway. This same procedure will be repeated until all conductors have been pulled-in. The conductors will then be pulled to proper tension and tied off at structures on each side of the roadway. After all the conductors have been pulled-in and secured in the bucket trucks, flagmen and warning signs will be removed from the roadway.

The time required to pull-in each conductor is anticipated to be approximately one hour.

The right of way or limited access fences will be grounded in accordance with the Department's standard specification requirements as set forth in paragraph 550-4.7 Electrical Grounds.





SECTION (LOOKING NORTH)

**EXHIBIT D (Continued)**  
**EXAMPLE PROCEDURE No. 3**

**METHOD OF STRINGING CONDUCTORS AND TRAFFIC HANDLING FOR CROSSING FREEWAYS AND ARTERIALS USING GUARD POLES INSIDE THE RIGHT OF WAY**

This method or equivalent will be followed for all crossings of high voltage lines crossing over roadways where the size and weight of a single or bundled conductor would prohibit the use of bucket trucks or other methods for reasons of safety. The use of Guard Pole structures, in this procedure, is not to facilitate the stringing of conductors, but for the protection of the motoring public. By specification these phase conductors are not permitted to be pulled along the ground or across the arm of the guard structure because of possible surface abrasions which would render the conductor defective for use in high voltage operations. The use of these guard structures is absolutely necessary to protect the motoring public in the event a mechanical failure occurs and the conductor should fall during the installation. The guard structures are installed to intercept the conductor in the event of such a failure and also to eliminate the necessity of completely stopping traffic during the actual stringing operation.

ALL REQUIREMENTS SET FORTH IN SECTIONS 4.B (2) (d) OR 4.B. (3) (d) SHALL BE MET WHEN INTERFERING WITH TRAFFIC.

The use of bucket trucks for this operation is not practical from a safety standpoint. In the event of a failure, the conductor in falling across the bucket or boom arm or running through the sleeves attached to the bucket, could drop both the arm and bucket as well as the conductor onto the roadway. The bucket truck and boom arm are designed to handle a vertical load, but will not withstand a transverse load imposed by a falling conductor.

Guard Pole Structures, of the single pole "Y" type, two or three pole "H" type (see attached sketch) will be installed on each side of the roadway outside the roadway clear zone (depending upon design speed of highway). Depending upon the width of roadway, number, size and weight of conductors, guard poles of the same type described above will be installed in the median. Guard Rails, of the type used by the Department of Transportation, will be installed on each side of the structure in the median. These guard rails shall be of the rigid barrier type. Guard rails will not be installed for structures outside the roadway clear zone unless specifically required by the Department of Transportation.

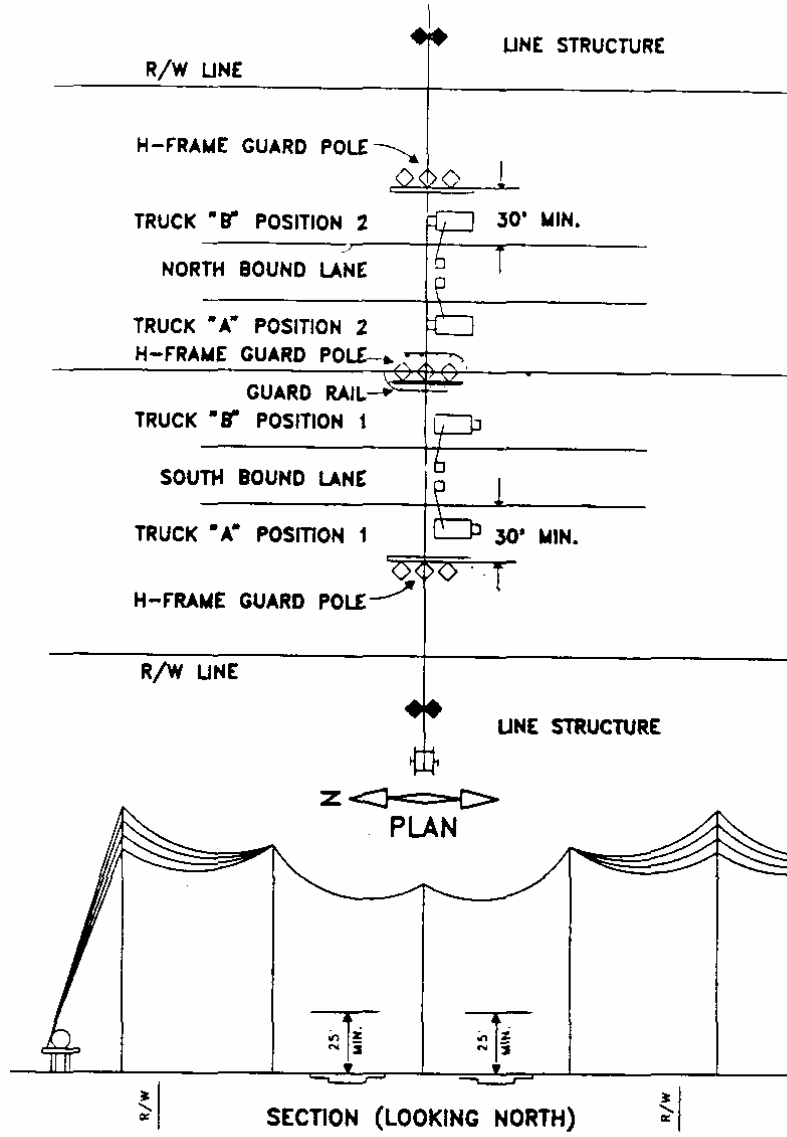
The stringing of conductors will be accomplished in the following manner, without any anticipated interruption to traffic in either direction:

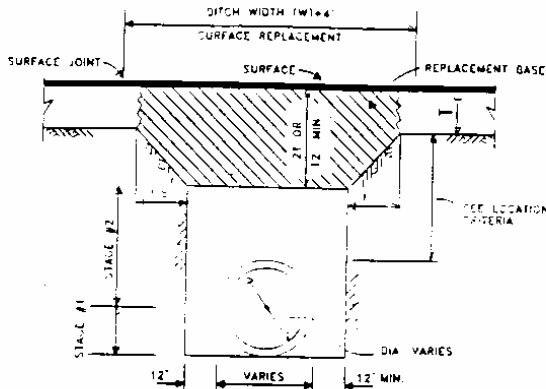
Phase I - South or West Bound Lane - We propose to position one bucket truck "Truck A" on the grass shoulder on the West or North side of the traffic lane and one bucket truck "Truck B" on the grass shoulder on the East or South side of traffic lane in median. A pull or bull rope

will be pulled from the structure West or North of the right of way line to "Bucket Truck A". The man in this bucket will coil sufficient rope in this bucket to reach across the traffic lanes. This bucket will be raised and swung over the traffic lanes meeting bucket from "Bucket Truck B" over the center of the lanes. The buckets of both trucks will then be raised to maximum vertical position and a sufficient length of rope coiled into the bucket to reach across the North or East Bound Lane. "Truck A" will maintain its position, maintaining maximum clearance over roadway as "Truck B" then moves to position 2, as indicated on sketch. "Truck B" will maintain maximum clearance over roadway as "Truck A" moves through the nearest interchange to the North or East Bound Lane and assumes position 2, as indicated on sketch.

Phase I - North or East Bound Lane -The same procedure as described in Phase I will be followed in passing the pullrope across the roadway. The buckets will be brought together over the roadway and the rope passed from "Truck B" to "Truck A" - The bucket of "Truck A" then swings to the East or South to pass the pull rope to the structure outside the East or South right of way. The pull rope is attached to a steel pullcable which is pulled across to the pulling rig. The phase conductor or bundle conductors and another pullrope are attached to the steel cable and pulled in under tension. The conductor is then tied off until all conductors have been pulled through using the same procedure. When all conductors have been pulled in the conductors are pulled to the proper tension and are clipped-in and conductors secured. The bucket trucks are removed from the roadway upon completion of the pulling in of the conductors. After the conductors have been clipped-in and secured, the guard poles and guard rails will be removed, the holes refilled and sod replaced, signs removed and flaggers relieved.

Roadway fences, if any, will be grounded in accordance with the Department's Standard Specification requirements as set forth in paragraph 550-4.7 Electrical Grounds.





REPLACEMENT OF FLEXIBLE PAVEMENT FOR PERMITTED PAVEMENT CUT

**DENSITY PROCEDURES:**

The backfill for the first and second stages shall be placed in 6" layers (compacted thickness) and shall be compacted to 100% of maximum density as determined by AASHTO T-99.

**Stage #1**

The permittee shall provide adequate 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 required.

**Stage #2**

The permittee shall obtain a well-compacted bed and fill along the sides of the pipe and to a point indicating the top of sub-grade material.

**General Notes:**

Base and backfill material shall be either of the same type and composition as the materials removed, or of equal or greater structural adequacy. Materials contaminated with deleterious substances during excavation shall not be used.

Replaced base material over ditch shall be twice the thickness of the original base.

Base material shall be placed in two or three layers and each layer thoroughly rolled or tamped to the specified density.

Asphalt concrete pavement joints shall be mechanically sawed.

Surface treatment pavement joints shall be lapped and feathered.

Surface material will be consistent with the existing surface.

**LIMEROCK, SAND-CLAY, SHELL, ETC. BASES:**

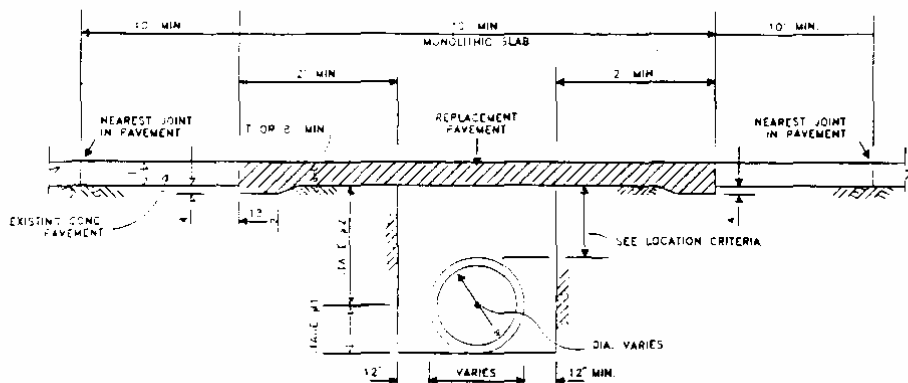
6" Layers Compacted Thickness Density Requirements:

98% Under Roadway

95% Outside the Traveled Roadway, Such as Intersections, Cross-overs, Turnouts, etc.

95% Shoulder Pavement

METHOD AASHTO T-180



**REPLACEMENT OF CONCRETE PAVEMENT  
FOR PERMITTED PAVEMENT CUT**

**DENSITY PROCEDURES:**

The backfill for the first and second stages shall be placed in 6" layers (compacted thickness) and shall be compacted to 100% of maximum density as determined by AASHTO T-99.

**Stage #1**

The permittee shall provide adequate 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 required.

**Stage #2**

The permittee shall obtain a well-compacted bed and fill along the sides of the pipe and to a point indicating the bottom of replacement pavement.

**General Notes:**

1. 3000 lbs./sq. in. concrete, by use of High Early Strength Cement, to be used for replacement, or other approved high strength, fast set materials.
2. Concrete pavement joints shall be mechanically sawed to conform with adjoining slabs.
3. Backfill materials shall be either of the same type and composition as the materials removed, or of equal or greater structural adequacy. Materials contaminated with deleterious substances during excavation shall not be used.

EXHIBIT F

JACKING AND BORING  
TABLE OF CONTENTS

	PAGE
1. INTRODUCTION.....	52
A. Purpose.....	52
B. Scope.....	52
C. Definitions and Terms.....	52
2. MATERIAL.....	53
A. Encasement.....	53
Casing Length Requirements.....	55
B. Drilling Fluids.....	56
C. Shoring and Bracing Material.....	56
3. EQUIPMENT.....	57
A. General.....	57
1. Auger Power Units.....	57
2. Augers.....	57
3. Cutting Heads.....	57
4. Auger Tracks.....	58
5. Jacks.....	58
6. Anchors and Braces.....	58
7. Dewatering Equipment.....	59
8. Other Equipment.....	59
4. PERSONNEL REQUIREMENTS.....	59
A. Permittee Representation.....	59
B. Work Force Requirements.....	59
C. Department Representation.....	60
D. Work Scheduling.....	60
5. PROCEDURE.....	60
A. Traffic Safety.....	60
B. Subsurface Soil and Drainage Investigation..	61
C. Dewatering.....	63
D. Jacking Pits.....	64

EXHIBIT F

	PAGE
E. Equipment Set-Up.....	65
Methods of Reducing Skin Friction.....	66
Auger, Cutting Head and Casing Relationships	
F. Crossing Operation.....	68
Open End/Closed End Jacking Criteria.....	69
G. Equipment Breakdowns or Other Unforeseen Stoppages.....	69
H. Permit on Job Site.....	70
6. WAIVER OF REQUIREMENTS.....	70
7. REPORTING PROCEDURES.....	70
8. CROSSING DATA.....	72
9. UNDERGROUND CROSSING LOG.....	74



## 1. INTRODUCTION

### A. Purpose:

The purpose of this section is to expand and standardize the guidelines pertaining to underground utility crossings by methods other than open cutting.

The guidelines contained herein are intended solely to prevent unnecessary failures and to provide sufficient detail to insure uniform application of the guidelines Statewide.

### B. Scope:

The guidelines set forth in this section are to regulate and control all aspects of underground utility crossings by jacking, driving, pushing, boring, tunneling, pulling, or combination thereof and other methods except open cutting or trenching. The guidelines established herein to provide such regulation and control are not intended to provide complete step by step instructions for a proper underground crossing operation. These guidelines do, however, specify a wide range of procedural precautions necessary to insure that the very basic, essential aspects of a proper crossing operation are adequately controlled. Such aspects were determined by a consensus of Department and industry input. In all cases the ultimate success or failure of a crossing will depend upon the experience and skill of the permittee or his contractor. Further, the wide range of possibilities concerning job site conditions, economics and future technological improvements dictate that this supplement be used as a guide. However, strict adherence shall be required under specifically covered conditions outlined in this guide and other mitigating circumstances where a mutually agreeable solution cannot be worked out at the local or District level, questions concerning the contents of this section should be referred to the State Maintenance Engineer for final resolution.

Adherence to the guidelines contained herein, or the Department's approval of any aspect of any crossing operation covered by this section, shall in no way relieve the permittee of his ultimate responsibility for the satisfactory completion of the work authorized by the utility permit.

### C. Definitions and Terms:

Wherever in this section or other documents pertaining to it, the following terms appear, their intent and meaning shall, unless specifically stated otherwise, be interpreted as follows:

- (1) Department - State of Florida Department of Transportation.
- (2) Maintenance Engineer - Department of Transportation local Maintenance Engineer named in paragraph three of the utility permit.
- (3) Inspector - An authorized representative of the local Maintenance Engineer.
- (4) Permittee - The individual, firm, company or governmental agency identified as the permittee on the utility permit.
- (5) Contractor - The individual, firm or company, contracting with the permittee for performance of work authorized by the utility permit.
- (6) Sub-contractor - The individual, firm, or company, contracting with the contractor, as previously defined, authorized by the utility permit to work.
- (7) Major Crossing - Pipe crossings eight 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.
- (8) Actual Crossing Operation - That phase of the work authorized by the utility permit, when the casing or uncased carrier pipe is being placed within the physical limits prescribed to determine the required casing length as set forth in Section 2.A(2) of this Exhibit. Specifically, not to include preliminary work such as jacking pit construction, equipment set-up, etc.

2. MATERIAL - All material used in the execution of work authorized by the utility permit.

A. Encasement material to include uncased carrier pipe.

- (1) Composition and Strength – All casings shall conform to the appropriate strength and composition requirements set forth in the main body of the Utility Accommodation Guide and to the following additional requirements.
  - (a) Must be chemically compatible with any material it is to transport or otherwise contact.
  - (b) Unless otherwise tested and approved by the Department prior to beginning work, all encasement pipes or uncased carrier pipes shall be new and of round, smooth wall, leakproof construction. Used pipe in good condition may be used if approved by the local Maintenance Engineer prior to beginning work
  - (c) The use of casings (not encased carriers) with wrapped protective coverings will not be owed.
  - (d) All steel casings shall conform to the following minimum thickness requirements:

<u>Nominal outside diameter-inches</u>	<u>Minimum wall thickness-inches</u>
3/4"	0.113"
1"	0.133"
1 1/4"	0.140"
1 1/2"	0.145"
2"	0.154"
4"	0.188"
6"	0.188"
8"	0.188"
10"	0.188"
12"	0.188"
24"	0.250"
30"	0.312"
36"	0.375"
42" and greater	0.500"

Minimum thickness for pipe diameters not shown shall be the same as required for the next larger size listed above.

- (e) Plastic Pipe - Plastic pipe may be installed by jacking & boring except for use as pressurized carrier pipes containing gases or fluids. Closed end jacking of plastic pipe, or open end jacking without an auger for continuous cleanout of the bore as the jacking progresses, will not be allowed.

Plastic pipe must meet or exceed the following strength and composition standards:

<b>PVC</b> (Polyvinyl-Chloride)	ASTM D 1785
<b>PE</b> (Polyethylene)	ASTM D 2447
<b>PE</b> (Polyethylene) Gas pipe over 3 1/2"	ASTM D 2513
<b>PB</b> (Polybutylene)	ASTM D 2662
<b>CAB</b> (Cellulose Acetate Butyrate)	ASTM D 1503
<b>ABS</b> (Acrylonitrile-Butadiene-Styrene)	ASTM D 1527
<b>RTRP</b> (Reinforced Thermosetting Resin Pipe) or	ASTM D 2296 D 2997

An air pressure test for leaks shall be conducted in the presence of the local Maintenance Engineer or his representative immediately upon completion of each crossing at a minimum test pressure of 20 psig. The test shall be abandoned, if in the opinion of the local maintenance engineer, the leaks are potentially damaging to the roadway.

Either of the two test methods outlined below will be satisfactory.

- (i) Standard twenty-four (24) pressure test with recording chart.
- (ii) Pressure test utilizing a dragnet type leak detecting device, or other equivalent testing equipment capable of detecting pressure drops of one-half psi. Length of test to be as recommended by the testing equipment manufacturer for the conditions of the particular job.

Immediately following the pressure test, the results shall be furnished to the Department of Transportation representative.

Leaking pipes that cannot be repaired to meet pressure test are to be filled with concrete by pressure grouting, or other approved means and abandoned if in the opinion of the local Maintenance Engineer the leaks are potentially damaging to the roadway.

- (2) Length - Casings and uncased carrier pipes shall be of sufficient length to extend under all pavements and in no case shall the end of the casing be closer than four (4) feet (eight (8) feet preferably) from the pavement edge including paved shoulders, or two (2) feet from back of curb plus additional length as necessary to extend to the excavated slopes of the jacking and receiving pits. Slope requirements are detailed in 5.D of this exhibit. The ends of casings under limited access facilities and all casings for flammable materials shall be no closer to the pavement edge (including paved shoulders) than the toe of the front slope. Casings may be required to extend to the right of way limits or frontage roads to provide for maintenance access on limited access facilities where periodic maintenance activities on the utility are expected. Casings shall also extend beyond pavement areas that are to be widened in the near future when proposal of such widening is supported by a design study.

### (3) Joints and Couplings

#### (a) Steel Pipe

- (i) Couplings - Couplings shall be tight, tack welded if necessary, and sufficiently rigid (no noticeable movement in joint) to prevent misalignment during driving or pushing operation. Tack welding of couplings is only required where necessary to ensure the integrity of the joint.

- (ii) Welded Joints - Joint welds shall be made in a neat workmanlike manner, shall be air tight and continuous over the entire circumference of the pipe, and shall increase the outside diameter by no more than  $\frac{3}{4}$ " total.
- (b) Plastic Pipe
  - (i) Couplings - Plastic pipe couplings shall meet or exceed all applicable ASTM strength and composition standards for the particular type being used.
  - (ii) Joints - Plastic pipe joints shall be made in accordance with applicable ASTM Standards. In all cases, the joints shall be made sufficiently strong to withstand the stresses of jacking, with joints completely set and cured prior to placement of the pipe.
- (c) Coupling thickness shall be such that the overall casing diameter is increased by no more than  $\frac{3}{4}$ " total. All couplings shall be leakproof.

B. Drilling Fluids:

If drilling fluids are used to lubricate the auger and facilitate the removal of cuttings, they shall consist of a mixture of water and gel-forming colloidal material such as bentonite, or a polymersurfactant mixture producing a slurry of custard-like consistency.

Plain water may be used if appropriate under the conditions outlined in Section 5.F. of this exhibit.

C. Shoring and Bracing Material:

Materials used for sheeting, sheet piling, cribbing, bracing, shoring and underpinning shall be in good serviceable condition, and timbers shall be sound, free from large or loose knots and of proper dimensions, as required by OSHA regulations.

### 3. EQUIPMENT

#### A. General:

In keeping with the overall objective of this guide, this section is intended to set forth guidelines in the area of equipment solely to prevent unnecessary stoppages and subsequent damage to the roadway.

All equipment used in the execution of work covered under the utility permit shall have the built-in capacity, stability and necessary safety features required to fully comply with the specifications and requirements of this guide without showing evidence of undue stress or failure.

It shall be the responsibility of the permittee to assure that the equipment to be used in the crossing operation is in sound operating condition. Backup equipment may be required where job site conditions indicate that severe damage to the roadway or a hazardous condition may result in the event of an equipment breakdown and where the condition of the equipment to be used indicates that routine component replacement or repair will likely be necessary during the crossing.

- (1) Auger power units - Power units providing rotational force to the cutting head and/or the auger used to remove spoil material as the bore progresses, may also provide power for jacks used to push the casing. Power units shall be in proper operating condition and shall have sufficient power to satisfactorily complete the proposed crossing according to the manufacturer's recommendations.
- (2) Augers - Screw-type steel drive tubes or shafts with one male end and one female end for coupling and welded steel flighting (threads).
  - (a) Auger shafts shall be straight and otherwise undamaged.
  - (b) Flighting shall be undamaged and securely welded to the body of the auger shaft and be continuous with no gaps from end to end of each auger section.
- (3) Cutting Heads - Boring attachment fastened to leading end of first auger section equipped with special teeth, bits, blades, chippers or cutters used to cut or chip away rock or hard soils in advance of auger.
  - (a) Cutting heads shall be undamaged and have no missing or broken teeth or bits.
  - (b) Pinned or hinged wing cutters must be constructed in such a manner as to ensure overboring does not exceed limits specified in Section 5.E. (3) of this exhibit.

- (4) Auger tracks - Supports boring machine and provides line and grade control.
- (a) Tracks shall be straight and otherwise undamaged with no broken welds.
  - (b) Tracks shall be constructed so as to remain rigid at joints and allow no appreciable flexing as power unit passes.
- (5) Jacks - Hydraulic, mechanical, or manual power units providing horizontal thrust for pushing casing or carrier pipe. Shall have sufficient power to satisfactorily complete the proposed crossing according to the manufacturers' recommendations.
- (a) Hydraulic - Shall be in sound operating condition. Hoses shall not be cracked or split; all couplings and fittings shall be tight and entire system reasonably free from leaks. Hydraulic cylinder rods should be clean and smooth to prevent damage to cylinder seals.
  - (b) Mechanical - Includes manual and power drivers, ratchet type jacks, winch and pulley systems. All mechanical jacking systems shall be in sound operating condition with no broken welds, excessively worn parts, broken teeth, badly bent or otherwise misaligned components. All ropes, cables, clamps and other non-mechanical but essential items shall be in sound condition.
  - (c) Other - Devices or systems for providing horizontal thrust other than those previously defined in the preceding sections shall not be used unless approved for use by the Department prior to commencement of work. Consideration for approval will be made on an individual basis for each properly permitted crossing. The proposed device or system will be evaluated prior to approval or rejection on its' potential ability to complete the crossing satisfactorily without undue stoppage and to maintain line and grade within the tolerances prescribed by the particular conditions of the job.
- Jetting or water sluicing methods, jetting with compressed air, or boring or tunneling devices with vibrating type heads that do not provide positive control of line and grade shall not be allowed.
- (6) Anchors and Braces - Jacking base or deadman used to provide a rigid base from which the horizontal thrusting from the jacking unit is transferred to the casing.

The jacking base or deadman must be sufficiently strong to withstand the pressures

generated by the jacking unit throughout the jacking operation without appreciable movement or deformation.

- (7) Dewatering Equipment - Equipment used to evacuate ground and surface water from jacking and receiving pit areas and along path of proposed bore.
  - (a) Pump - Shall be in proper operating condition and of sufficient capacity to satisfactorily dewater the pit and bore areas under the conditions of the particular job.
  - (b) Header line - Collector pipe connecting pump with individual swing joints, risers and well points in a well point dewatering system. Header line shall be straight, free from large dents, kinks, or cracks and sufficient in size to pass anticipated flow.
  - (c) Swing joints or half swings - Hoses or pipes that connect individual well points and risers to header line. Swing joints shall be undamaged and feature a workable stop cock or equivalent device for controlling air intrusion into the system.
  - (d) Risers - Pipes connecting well points to swing joints should be reasonably straight and otherwise undamaged.
  - (e) Well points - Connect to bottom end of riser pipe, perforated and screened to draw water from surrounding area without allowing the intrusion of soil. Well points must be undamaged and screens clear and unclogged.
- (8) Horizontal Boring Equipment - Equipment shall include locking devices, surveying instruments, power plants, hydraulic motors and attachments as well as mud mixing units and related equipment.
- (9) Other Equipment - Any equipment used on the job that has not been defined and covered previously in this Section must be in proper working order and otherwise conform to the requirements as outlined under Equipment-General, at the beginning of the section.

#### 4. PERSONNEL REQUIREMENTS

- A. A responsible representative of the permittee must be present at all times during the actual crossing operation on "Major Crossings". A responsible representative as specified herein is defined as a person experienced in the type of work being performed and who has the authority to represent the permittee in a routine decision making capacity concerning the manner and method of carrying out the work authorized by the utility permit.
- B. The permittee or his contractor shall have a sufficient number of competent



workers on the job at all times to insure the crossing is made in a timely and otherwise satisfactory manner. Adequate personnel for carrying out all phases of the actual crossing operation (where applicable: boring machine operator; qualified welder(s) for joining additional casing sections; crane or lift operator for removing spoil material; and laborers as necessary for various related tasks) must be on the job site at the beginning of work. A competent and experienced supervisor representing the contractor that is thoroughly familiar with the equipment and type work to be performed, must be in direct charge and control of the operation at all times. In all cases the supervisor must be continually present at the job site during the actual crossing operation.

- C. As stated in the utility permit, the office of the local Maintenance Engineer must be notified 24 hours in advance of starting work. In addition, the actual crossing operation shall not begin except as allowed by part D of this section until the local Maintenance Engineer or his representative is present at the job site and agrees that proper preparations for the crossing have been made. The local Maintenance Engineer's approval for beginning the crossing shall in no way relieve the permittee of the ultimate responsibility for the satisfactory completion of the work as authorized by the utility permit.

The local Maintenance Engineer or authorized representative must be present on the job site at all times during the actual crossing operation on "Major Crossings", or where plastic pipe is used.

- D. It shall be the responsibility of the Department to provide inspection personnel at such times as appropriate without causing undue hardship by reason of delay to the permittee or his contractor.

If the permittee or his contractor fails to begin the crossing at the agreed time, the local Maintenance Engineer will establish the next mutually convenient time to begin.

On the other hand, the permittee or his contractor shall not be required to delay the operation beyond the agreed starting time if the Department fails to have its representative present at that time.

To avoid undue hardship on either party, reasonable and mutual cooperation should be exercised where starting times are concerned. If one party fails to meet the agreed schedule, the other party is expected to consider a delayed start if the crossing can be completed during daylight hours in keeping with the requirements of Section 5.F. of this exhibit.

Crossing operations shall begin and end within the Monday through Friday work week, except as noted in paragraph 5.F., "Crossing Operations," of this exhibit.

5. PROCEDURE

A. Erection or installation of appropriate safety and warning devices shall be completed prior to beginning work. See Section 7 of the Utility Accommodation Guide for Maintenance of Traffic Requirements.

B. Subsurface Soil and Drainage Investigation

In general, the greatest influences on the success or failure of an underground crossing are the existing subsurface soil and water conditions. To correctly plan individual crossing procedures such as dewatering, use of cutting heads, positioning of auger within the casing, and to accurately locate potential problem areas, subsurface investigation must be made by the permittee or his contractor.

Prior to beginning work on "Major Crossings", and when requested, the permittee must submit to the Maintenance Engineer a report of subsurface soil and ground water conditions as they exist in the area of the jacking pits and along the path of the proposed crossing. The purpose of the report is to insure that the subsurface conditions are known to the permittee or his contractor and his proposed crossing procedure is based on factual information.

The report must be in writing and contain:

- (1) General classification of soils along path of proposed crossing.
- (2) Ground water elevation(s) along path of proposed crossing.
- (3) Location and size of underground utilities or obstructions discovered during the investigation that were not shown, or were shown inaccurately on the utility permit sketch.
- (4) Invert elevation(s) of proposed bore, and existing utilities and obstructions.
- (5) Jacking and receiving pit floor elevation(s).
- (6) Profile drawing showing roadway cross section and subsurface conditions such as location, cover, diameter, type of material and carried product of all known existing utilities along path of proposed bore, with pertinent information clearly labeled and dimensioned.
- (7) Project identification and testing log.
  - (a) Utility permit number, and location of project,
  - (b) Name of person collecting data, firm employed by,

- position with firm.
- (c) Dates and times of ground water observations including the time and date the test hole was made.
  - (d) Equipment used.
  - (e) Comments and pertinent information not shown in body of report, including any information concerning the subsequent design of a dewatering system that might not have any other effect on the proposed crossing procedure. For example, a thin but impervious layer of clay that would have little or no effect on the jacking procedure itself, could indicate a perched water table that would certainly have to be considered in the design of a dewatering system.

The purpose of the subsurface investigation report must be considered foremost in collecting the required data. The detailed classification of soils necessary for most engineering purposes would be difficult to interpret and relate to the job at hand from a boring contractor's viewpoint. Therefore, rather than utilizing one of the several formal soil classification systems currently in use, the data should be separated into broad categories of materials that have a direct and clear bearing on what procedure should be followed on an individual crossing.

In general, the subsurface materials should be separated into the following categories:

- (f) Rock
- (g) Hard-pan, clays, hard sand-clays
- (h) Stable, cohesive soils (other than those above)
- (i) Loose, unstable soils

Any soil not falling clearly into one of the preceding categories should be described in sufficient detail to indicate its possible influence on the proposed crossing.

The determination of ground water levels is an important aspect of a sub-surface investigation. Saturated soil conditions along the path of a proposed crossing dictate a crossing procedure quite different from that of a crossing through dry materials. Every effort should be made therefore, to secure accurate and complete water table information.

The method of obtaining the required data will vary depending upon the type of highway facility and the nature of the utility involved; for example, for small diameter crossings under rural two lane roads where soil

conditions are not subject to great variation, a test hole on either side of the pavement made with a post hole digger or hand auger might be sufficient. The other extreme would be a large diameter bore under a multilane facility in an urbanized curb and gutter section where the possibility of a damaging and possibly hazardous failure due to unknown subsurface problems requires that considerably more effort be made in the subsurface investigation. Core borings through the pavement slightly offset from the proposed bore might be in order. The corings would be spaced at intervals dictated by sound local practice that will produce an accurate profile of subsurface conditions.

Corings through pavement would be unnecessary in areas known to have no significant soil variations; however, when, pavement coring is in order it shall be done by qualified persons with appropriate equipment with the test holes properly refilled and patched at the end of each operation. If dewatering is required, (see following section) one test hole on either side of the pavement and in median areas where applicable, shall be cased for use as piezometers to monitor ground water levels during the actual crossing. The casings will be allowed to protrude above ground only when adequately delineated and while work is in progress.

Prior to conducting a subsurface investigation, the proposed means of obtaining the required data on limited access facilities and corings through any paved area must be approved in advance by the local Maintenance Engineer or authorized representative.

If the subsurface conditions are known to the permittee or his contractor by previous work done in the immediate area, the information can be recorded in the subsurface investigation report with no physical testing required.

If the permittee or his contractor is not adequately equipped or experienced to satisfactorily meet the requirements of this section, or if preceding subsurface investigation reports as submitted for previous jobs proved to be significantly inaccurate, the local Maintenance Engineer may require that the subsurface investigation and report be done by the permittee's choice of reputable soils engineering firms experienced in the type of work herein required.

C Dewatering - Evacuation of ground and surface water from jacking and receiving pits and from path of proposed crossing. Where the ground water level is above the invert of the proposed crossing, or above the floor level of the jacking pits, dewatering is necessary to reduce the water level to below the jacking pit floors and the invert of the proposed crossing, and must be designed, installed and in operation prior to beginning the crossing as follows:

- (1) On all "Major Crossings" except where rock is present throughout the length of the bore and no likelihood of sand pockets exists.
- (2) On a crossing not otherwise classified as major, where the existing ground water level and particular soil type involved indicates that excessive flowback of spoil material as the jacking progresses is likely.

Dewatering shall not be necessary where remote-powered hydraulic equipment is used to make the crossing underwater.

When dewatering is necessary, and if requested, a plan showing the proposed method must be submitted to the local Maintenance Engineer prior to beginning work. It must be in writing and should be included with the subsurface investigation report.

The dewatering report shall contain where appropriate:

- (1) Plan and profile drawing of area to be dewatered, showing:
  - (a) Location on plan view of pumps, headers, well points, berms, sump holes, discharge points and their relationship to the roadway, jacking pits and path of proposed crossing.
  - (b) Elevations or depths on profile view of same features and equipment as above.
- (2) Project identification and system design information.
  - (a) Utility permit no., and location of project.
  - (b) Name of person who designed the proposed the dewatering system, firm employed by, position with the firm.
  - (c) Data upon which design was based.
    - (i) Subsurface investigation as previously required.
    - (ii) Previous experience in same area.
    - (iii) Other, describe.
  - (d) Party responsible for operation and maintaining the proposed system.
  - (e) Comments and pertinent information not otherwise given.

The importance of a properly functioning dewatering system cannot be over emphasized. If the permittee or his contractor does not possess the experience and expertise necessary to properly design, operate and maintain dewatering system as dictated by individual project conditions, the local Maintenance Engineer may require that the system be designed or operated by the permittee's choice of reputable firms specializing in dewatering operations. Dewatering systems shall be in conformance with all applicable Federal, State, County and local pollution control and environmental protection regulations.

D. Jacking Pits - Excavated areas from which jacking and receiving operations are accomplished.

- (1) Jacking Pit Excavation - Pit excavation shall be no closer than four (4) feet from the roadway or shoulder pavement edge, or two feet from back of curb, whichever is applicable. When deemed necessary for safety, the Maintenance Engineer may require a greater distance than four (4) feet from the edge of pavement when shoulder pavement is not present. Pits on limited access facilities shall be no closer to the pavement edge than the toe of the front slope.

The pit dimensions shall be large enough to provide a safe, adequate working area with slopes no steeper than:

- 1/2:1 in hard pan, clay or hard sand-clays
- 1:1 in stable cohesive soils
- 2:1 in loose unstable soils

Slopes shall extend from proposed casing invert elevation to existing ground level. Slopes are not required in solid rock.

In lieu of constructing slopes as above, the pit walls may be shored, sheeted, braced or otherwise supported by means of sufficient strength to protect the employees and inspectors working within them.

- (2) Pit Floor Stabilization - Where necessary to insure a solid, stable base for boring machinery, same means of stabilizing the pit floor must be provided. Stabilizing may vary depending upon job site conditions, from timber supports under tracks, addition of clean sand or gravel to pit floor, or in some cases the construction of concrete slabs on the pit floor. All stabilizing materials other than sand, gravel, and like materials must be removed upon completion of the project.

E. Equipment Set-Up:

- (1) Aligning and leveling of auger tracks - To properly control line and grade during the crossing operation, it is imperative that the jacking unit tracks be rigidly set to the predetermined level and alignment requirements of the job. Control should be insured by the use of appropriate engineering instruments.
- (2) Auger and casing section lengths should be determined prior to beginning the crossing operation to insure that the leading end of the first casing section will

not be under, or within three (3) feet of, any Roadway Pavement when the crossing operation is halted to join new auger and casing sections. As an exception, in areas where jacking pit space is restricted by narrow Department of Transportation right of way, or obstructions and will not allow continuous operations under paved areas as stipulated in this section, all preparations for adding additional casing and augers should be made prior to stopping under the pavement and the joint made as quickly as possible.

Crossings made by closed end jacking method or crossings made in materials other than loose unstable soils, are not subject to the provisions of this section.

- (3) Methods of Reducing Skin Friction -- Friction between the outer surface of the casing and the surrounding soil may be reduced by increasing the diameter of the casing hole by no more than 3/4 inch greater than outside diameter of casing itself. This may be accomplished as follows:
- (a) Overboring - Use of a cutting head with an overall diameter of no more than 3/4 inch greater than the casing diameter. Maximum diameter includes wing cutters which must be securely blocked to limit the overall diameter in order to meet this requirement.
  - (b) Use of bands, couplings, collars or welds will be allowed, providing the casing diameter is increased by no more than 3/4 inch. Any such device or method used shall be rigidly affixed and shall in no way weaken the leading edge of the casing. Collars and couplings used to reduce skin friction on steel pipe must be welded in place when cutting heads are used, eliminating the possibility of the cutting head unscrewing or dislodging the collar or coupling during the operation.
  - (c) Use of lubricating materials on the outer surface of the casing to reduce skin friction is also acceptable, subject to the requirements of the Department of Environmental Regulation.

Flaring of the casing end will be allowed provided that the original casing diameter is exceeded by no more than 3/4 inch.

Any cuts, tears, or cracks made to facilitate flaring shall be repaired and reinforced by welding to ensure that the strength of the flared section is equal to or greater than the original section, The use of a misaligned, undersized auger to cut an oversized hole is prohibited.

- (4) Relationship between auger or cutting head to leading end of first casing section. The leading end of the first casing section shall be straight cut ninety degrees to the centerline of the casing and the distance between the back of the cutting head or leading edge of the first bare auger section, to the leading end of the casing shall be as follows under the appropriate soil condition.
- (a) Rock - On crossings made through solid rock, where the cutting head must precede the casing, the space between the back of the cutting head and the end of the casing shall be limited to the clearance necessary to allow the cutting head to function without coming in contact with the end of the casing. In areas where sand pockets may be encountered the cutting head must be constructed so that it can be retracted into the casing, to within the limits specified in this section for the particular material encountered.
  - (b) Hard pan, clay, hard sand-clay and stable cohesive soils - As in rock, the cutting head should normally precede the casing but the type cutting head used must allow no more than two (2) inches between the back of the head and the leading end of the casing. Cutting heads with cylindrical, pointed chippers designed for use in solid rock shall not be used.
  - (c) Loose unstable soil - The distance between the leading end of the first auger section and the leading end of the casing shall be as necessary to maintain a solid plug of spoil material inside the forward portion of the casing. For casing diameters eight (8) inches or greater, the minimum space between the leading end of the auger, or cutting head as allowed below, and the leading end of the casing shall be no less than one-half the casing diameter. However, the setback shall be increased if necessary to prevent undue flowback of the spoil material. No setback is required for casing diameters less than eight (8) inches.

Cutting heads may be used only where the subsurface investigation report or other reliable information indicates the likelihood of encountering a very hard soil strata, rock, or other obstructions such as tree stumps; and it is determined prior to beginning work that the area of difficulty may be passed by the use of an appropriate cutting head. The cutting head shall remain inside the casing as outlined above except during the passage of such obstructions.

On large diameter jacked crossings where cleanout of the bore is accomplished by special digging machinery or by hand, the distance between the leading end of the casing and the actual cleanout operation shall be no less than that necessary to insure that voids will not form around the outside of the casing. The use of tunnel liners will be allowed only where the installation method and soil conditions insure that voids will not be formed around the outside of the liner during installation.



- (5) Auger size and spacing - The leading auger section used in conjunction with a cutting head must be full-sized having an outside diameter not less than the inside diameter of the casing less the amount needed to provide the minimum working clearance necessary. In no case shall the auger diameter be less than 1/2 inch smaller than the inside casing diameter unless some other positive means of restricting the movement of the cutting head as previously required is assured. Less than full-sized augers that are large enough to remove spoil satisfactorily will be allowed when the auger is not used in conjunction with a cutting head and is to remain within the casing at all times, except as follows:

<u>Crossing Conditions</u>	<u>Minimum Length in Feet of Full-Sized Auger from Leading End of Casing</u>
Rock	0
Hard-pan, clay, hard sand-clay	(dry) 0*
	(wet) 20
Stable cohesive soils	(dry) 0
	(wet) 20
Loose unstable soils	(dry) 20
	(wet) 40

Crossings requiring dewatering are to be considered as wet in the above table.

- \* Full-sized augers are not required if lateral movement of the cutting head has been otherwise restricted in a satisfactory manner.

- (6) Steel shelving - Steel shelving welded inside the casing at the leading end to prevent undue flowback of spoil material, must be approved by the local Maintenance Engineer prior to use.

The casing, auger and cutting head requirements specified for the most restrictive condition to be encountered shall govern the set-up procedure for a particular crossing.

F. Crossing Operation:

The actual crossing operation shall be accomplished during daylight hours and shall not begin after the hour pre-established as the latest starting time that will allow completion during daylight hours except as allowed below.

In emergency situations, or where delay would increase the likelihood of a failure, nighttime work will be allowed to complete a delayed crossing. In addition where the obvious hazards of nighttime work are carefully considered and determined to be insignificant, nighttime work will be allowed to complete a properly planned crossing if the local Maintenance Engineer agrees that the delay was caused by reasonably unavoidable circumstances, when such nighttime work is necessary to avoid placing an undue economic hardship on the permittee or his contractor.

Planned nighttime work is expressly prohibited and will not be allowed except as allowed in the special conditions of the utility permit.

Any nighttime work shall be in strict conformance with Section 7 of this document.

Crossing operation requirements under the appropriate method used and subsurface conditions are as follows:

- (1) Driving or jacking, without auger - For casings with outside diameters of three (3) inches or less, at the minimum depth of 36 inches and up to five (5) inches outside diameter for depths of cover exceeding six (6) feet, closed end jacking or driving is permitted.
- (2) Hydraulic or mechanical jacking, with auger - The use of an auger is required by the Department on all crossings using casings greater than five (5) inches outside diameter (greater than three (3) inches outside diameter if less than six (6) feet deep) and is intended to prevent a rigid plug of spoil material from forming at the head of the casing.

If a drilling fluid is used to lubricate the outside of the casing, or the auger and cuttings, it shall not be pumped under pressure great enough to cause any jetting action whatsoever, or to otherwise saturate the soil ahead of the casing. External drilling fluid carriers shall be no larger than 3/4" O.D. and must be permanently and securely fastened to the casing with the leading end shielded from damage.

In soils with a high clay content only, plain water may be used to clean the augers as necessary to prevent binding. When plain water is used, it must be hand pumped or gravity fed through a carrier pipe permanently and securely fastened to the casing.

The point at which the water enters the casing shall be no closer to the leading end of the casing than one-half the casing diameter or twelve inches, whichever is less.

G. Equipment Breakdowns or Unforeseen Stoppages:

If forward motion of the casing is halted at any time other than for reasons planned for in advance (addition of casing and auger sections, etc.) and prevention of voids under paved areas cannot be assured, the casing must be filled with concrete by pressure grouting as soon as possible and abandoned. If removal of the augers from a casing to be abandoned will allow voids to form under paved areas at the casing head, the augers must be abandoned also.

When an obstruction is encountered that cannot be passed or an existing utility is damaged, cutting of the pavement for inspection will be approved by the local Maintenance Engineer or his representative, when consideration of all pertinent facts indicate that such action would offer the most practical solution to the problem for all parties concerned. Any such authorized pavement opening shall be repaired according to the appropriate specifications in the Utility Accommodation Guide. No cutting of the pavement will be allowed on Interstate or other limited access facilities.

H. Permit on Job Site:

A copy of the approved Utility Permit and plan sheet(s) shall be kept by the permittee or his contractor at the job site at all times. If a subsurface investigation report and/or a dewatering plan is required, they too shall be kept at the job site along with the Utility Permit, and shall be shown to the Department's representative upon request.

6. WAIVER OF REQUIREMENTS

The requirements and recommendations contained in these guidelines are appropriate for the most common crossing situations. Under unusual conditions, not adequately covered herein, these requirements may be altered or waived when their strict adherence would increase the likelihood of a crossing failure. Any such alteration or waiver shall be based on sound engineering judgement and must be fully documented as outlined in Section 7 of this exhibit. Any alteration or waiver must be approved by the District Maintenance Engineer or authorized representative.

7. REPORTING PROCEDURES

An accurate log shall be kept by the local Maintenance Engineer or authorized representative on all major crossings. The purpose of this log is to record and report the data necessary to isolate and identify all common factors associated with underground crossing failures.

The log shall be filed with the local Maintenance Engineer's copy of the utility permit, subsurface investigation report, dewatering plan (if applicable), completion notice, and related correspondence.

The data shall be recorded on the job site during the actual crossing operation.

## 8. NEW TECHNIQUES

Notwithstanding the provisions of this guide relating to jacking and boring, other methods and techniques for installing utility crossing may be used subject to the approval of the Department, on a case by case basis.

**EXHIBIT G  
BRIDGE ATTACHMENT**

**PART A**

**CORROSION CERTIFICATION GUIDELINES**

Listed below are guidelines to assist in the proper design of bridge attachments regarding corrosion certification. These basic criteria are used to minimize the amount of corrosion interference resulting from the attachment of utilities to bridge structures.

The use of these guidelines and completion of the attached form "Corrosion Certification Information Form" is required to expedite the handling of the permit request. The Corrosion Certification Information Form must be submitted with the permit request.

1. Provide a dielectric barrier between the utility and bridge structure which will insulate them electrically. This can be accomplished by using a non-metallic material for mounting hardware, supporting the pipe on an insulating pipe roll, encasing the utility in non-metallic pipe or providing a coating or wrapping such as neoprene between the utility and the mounting hardware. Additional precautions shall be taken by avoiding contact between metal components in the bridge and metal inserts and anchor bolts. Where pipe or utility is mounted on saddles and guides to allow for movement, additional provisions should be made to compensate for wear. All contact between dissimilar metals should be avoided.
2. The installation of insulating joints in the utility on each end of the bridge structure will help reduce the possibility of corrosion interference. Electrical test leads installed on each side of an insulated joint will provide the necessary means for periodic testing.
3. One utility shall not have electrical continuity with another in any of the sections attached to the bridge. Individual isolation will allow for correction of future problems which might occur and will expedite periodic maintenance checks and tests.
4. Where the utility passes through any part of the concrete bridge structure into the soil or water, provisions shall be made to separate the contact area. This can be accomplished by installing a nonmetallic sleeve through the concrete or by wrapping the utility with a mastic or neoprene material. Consideration should be given to separating the utility and concrete in buried thrust blocks.

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

**EXHIBIT G**  
(Part A, continued)  
**STATE OF FLORIDA DEPARTMENT OF TRANSPORTATION**  
**UTILITY ACCOMMODATION PERMIT**  
**CORROSION CERTIFICATION FORM**

Date: \_\_\_\_\_ Permit No.: \_\_\_\_\_  
Subject: Job No. \_\_\_\_\_ County: \_\_\_\_\_  
State Road No.: \_\_\_\_\_ Section: \_\_\_\_\_ Bridge No: \_\_\_\_\_  
Permittee Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Utility: Size and Type: \_\_\_\_\_  
Weight Per Foot (in operation): \_\_\_\_\_  
Coating Material: \_\_\_\_\_

**CORROSION CONTROL CHECKLIST:**

- |  |                  |
|--|------------------|
| (1) Insulated from bridge?   | Yes_____ No_____ |
| (2) Insulated from other Utilities?  | Yes_____ No_____ |
| (2) Insulating joints both ends?   | Yes_____ No_____ |
| (4) Electrical test leads on insulating joints?  | Yes_____ No_____ |
| (5) Provided dielectric barrier between Utility and concrete?                                    | Yes_____ No_____ |
| (6) Has any form of cathodic protection been planned for the underground portion of the Utility? | Yes_____ No_____ |
| (7) Closest cathodic protection system   | _____ Miles      |

Comments: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Submitted By: \_\_\_\_\_ Date: \_\_\_\_\_  
Signature and Title

## EXHIBIT G

### BRIDGE ATTACHMENT

#### PART B

### FLORIDA DEPARTMENT OF TRANSPORTATION COATING SYSTEMS FOR STEEL AND CAST IRON PIPING SYSTEMS ATTACHED TO BRIDGE STRUCTURES

Sections One (1) through Four (4) of the following coating system should be used for potable water mains attached to bridges and bridge appendages. Sections One (1) through Three (3) of the following coating system should be used for gas, sewer or other ferrous piping systems attached to bridges and bridge appendages.

1. SURFACE PREPARATION — Near white metal blast cleaning with silica sand (1.0 to 3.0 mil anchor pattern) according to SSPC-CP 10-63.
2. EXTERIOR METAL SURFACES (excluding pipe flange face)

PRIMER COAT — 3.0 mils to 5.0 mils (dry mils) of a two package selfcuring alkyl silicate inorganic zinc rich primer (80% to 85% metallic zinc in cured dry film).

INTERMEDIATE COAT — 4.0 mils to 6.0 mils (dry mils) of catalyzed polyamide epoxy (white).

TOPCOAT - 2.0 mils to 4.0 mils (dry mils) of catalyzed aliphatic polyurethane (gray color matching color no. 36622 of the Federal Standard No. 595a). Color banding should be used at the abutments and at 500' spacing along pressure pipe. This band should conform with OSHA color codes according to the material being transmitted. The color band should be six inches wide.

3. PIPE FLANGE FACE

PRIMER COAT - 3.0 mils to 5.0 mils (dry mils) of a two package selfcuring alkyl silicate inorganic zinc rich primer (80% to 85% metallic zinc in cured dry film). No intermediate coat or topcoat would be applied to the pipe flange face.

4. INTERIOR METAL SURFACES — Internal metal surfaces must be lined with cement or other linings. An alternate to lining the pipe would be to coat the surfaces as described below.



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

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

All coating products used are subject to the approval of the Bureau of Materials and Research, Florida Department of Transportation, Gainesville. The following materials have been approved.

FLORIDA DEPARTMENT OF TRANSPORTATION  
OFFICE OF MATERIALS AND RESEARCH

QUALIFIED PRODUCTS FOR SELF-CURING  
INORGANIC ZINC PRIMER PLUS EPOXY INTERMEDIATE  
COAT PLUS URETHANE FINISH COAT PAINTING SYSTEMS

MANUFACTURER	INORGANIC ZINC PRIMER	EPOXY INTER- MEDIATE COAT	URETHANE FINISH COAT
E. I. DuPont	347-Y-931	Corlar High Build #823- Y-Line	Imron 326- Y-Line
Ameron-Corrosion Control Division	Dimetcote No. 9	No. 383 HS	No. 450 GL
Carboline Co.	Carbo Zinc No. 11	No. 190 HB	No. 134 APR
Koppers Co.	No. 701	No. 107	No. 1122
Valspar Corp.	No 13F12	No. 89 Series	No. 40 Series
DeVoe-Prufcoat	Catha Coat No. 304	Chemfast No. 46700	AWLGRIP No. 82
M. A. Bruder Co.	No. 24-A-150	No. 520-W- 360	Ply-Thane 880
Porter Coatings Company	Zinc Lock 351	MCR 43	Hythane Urethane
TNEMEC Co Inc	TNEME-ZINC 90E92	Series 66 Epoxoline	Series 70 Endure-Shield
Southern Imperial Coatings Company	Durazime 555	Reactic 1219V	Permatheme 1021

Note 1 - The above paint systems are used as a three coat system for both Inland and Marine Applications.

Note 2 - Use of a manufacturer's inorganic zinc primer also requires the use of the manufacturer's designated epoxy intermediate coat and urethane finish coat.

SUPPL I ERS

<u>COMPANY NAME</u>	<u>ADDRESS</u>	<u>PHONE NUMBER</u>
Porter Coating Co.	PO Box 24246 Tampa, FL 33622	800-282-6692
Valspar Corporation Supplied by Sumtec	PO Drawer DP Gainesville, FI 32602	904-372-3421
Corrosion Specialties Inc.	PO Box 146 Tucker, GA 30084	404-938-7263
Koppers Company, Inc.	9310 NW 43 Manor Sunrise, FL 33321	305-475-2383
Carboline Company	4264 Queensway Rd. Jacksonville, FI 32223	904-268-7405
Ameron Company	2190 West 21 Street Jacksonville, FL 32209	904-355-2693
Tnemec Co. Inc.	PO Box 1470 Altamonte Springs, FL 32715	
Southern Imperial Coatings Company	PO Box 29077 New Orleans, LA 70189	
Du Pont Company Maint. & Finish Dept.	Clayton Building Concord Plaza Wilmington, DE 19898	302-772-5676
M. A. Bruder Co.	720 Central Fla. Pkwy. Orlando, FL 32824	305-851-6160

**EXHIBIT H**  
**RULES**  
**OF THE**  
**DEPARTMENT OF TRANSPORTATION**  
**CHAPTER 14-46**  
**RAILROAD/UTILITIES INSTALLATION OR ADJUSTMENT**

14-46.001 Utilities Installation or Adjustment.

- (1) **PURPOSE** - This policy is established to regulate the location and manner for installation and adjustment of utility facilities on any road, as defined by Section 334.03, Florida Statutes, under the jurisdiction of the Florida Department of Transportation (hereinafter the "Department") in the interest of safety and of protection, utilization, and future development of these roads with due consideration given to public service afforded by adequate and economical utility installations and to provide procedures for the issuance of permits.
- (2) **AUTHORIZATION BY THE DEPARTMENT REQUIRED** - No person shall enter upon the right-of-way of any road under the jurisdiction of the Department to construct, alter, operate, maintain or relocate any utility installation without first being issued a permit to do so except as otherwise noted in the Department's Utility Accommodation Guide.
- (3) **PERMITS** - The Department will issue permits for the construction, alteration, operation, relocation and maintenance of Utilities upon the right-of-way of any road under the jurisdiction of the Department in conformity with the Department's "Utility Accommodation Guide, May 1990 edition, which is hereby incorporated by reference and made part of this rule. Copies of this document are available at no more than cost pursuant to Section 120.53(2) (a), Florida Statutes.
- (4) **REIMBURSEMENT CONDITIONS - (other than Interstate)**
  - (a) The Department will not reimburse any utility for adjustment, relocation or removal of existing utilities where the utility is located on public rights of way or other areas dedicated for public use.
  - (b) The Department will reimburse a utility for the relocation, adjustment or removal of its facilities as a result of a Department road project, where the utility's facilities are located on property in which the utility holds a compensable property interest.

- (5) **REIMBURSEMENT CONDITIONS (Interstate)**  
If relocation of utility facilities is required by construction of a project on the Federal Aid Interstate System, and the cost of such project is financed by the Federal Government up to 90% under the Federal-Aid Highway Act, then in that event the Department will reimburse the expense of utility relocation in accordance with 23 CFR Part 645, which regulations are hereby incorporated by reference and made a part of these rules. Copies of this document are available at no more than cost pursuant to Section 120.53(2) (a), Florida Statutes.
- (6) **CALCULATION FOR STATE COST PARTICIPATION**  
When the Utility is eligible for any reimbursement from the Department, State participation will be based on the cost of making the required change in the utility after deducting any resulting increase in the value of the new utility and any salvage value derived from the old utility and otherwise as fixed by the Department of Transportation Procedure, Utility Relocation Costs, 710-010-030-b, effective May 19, 1989, which is hereby incorporated by reference and made a part of these rules. Copies of this document are available at no more than cost pursuant to Section 120.53(2) (a), Florida Statutes.
- (7) **COST DEVELOPMENT AND REIMBURSEMENT**  
Reimbursement by the Department for any eligible utility work will be based upon an executed utility agreement between the Department and the utility, authorizing the work of adjusting or relocating utility facilities. Reimbursement for utility work involving Federal Aid Participation will be subject to the provisions of 23 CFR, Part 645. Specific Authority 334.044(2) Florida Statutes. Law Implemented 337.401, 337.403, 339.05, Florida Statutes. History New 5-13-70, Amended 8-10-78, 7-22-82. Formerly 14-46.01, Amended.
- (8) **FORMS**  
The following Department forms referenced in the Utility Accommodation Guide are hereby incorporated by reference in this rule, and may be obtained from the local Maintenance Office within each Department District:
- (a) Utility Permit, Form 592-03 Utilities, 05/90;
  - (b) Permittee Nonconformance Violation of the Florida Statutes and Florida Administrative Code and Notice to Show Cause, Form 592-16 Utilities, 05/90.

#### 14-46.0011 Utilities Liaison

Recognizing that all utility owners serving the public have a common obligation to provide their services in a cost effective manner, the Department 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 Department will consider the cost of utility work necessary for the proposed project. The Department will keep utility agencies informed of future transportation projects and request the utility agencies to advise the Department of the location of existing and proposed structures within proposed project corridors. Specific Authority 334.044(2) F.S. Law Implemented 337.401, 337.402, 337.403, 337.404 F.S. History-New

# FLORIDA DEPARTMENT OF TRANSPORTATION

Bob Martinez  
Governor

605 Suwannee Street, Tallahassee, Florida 32399-0450, Telephone (904) 488-8541

Kaye N. Henderson  
Secretary

**Approved:**

**Effective: May 18, 1989**  
**Responsible Office: Utilities**  
**Topic No.: 000-710-001-a**  
**References: 23 U.S.C.,**  
**Parts 109 & 111**  
**337.401, F.S.**  
**Rule 14-46**  
**710-020-001-a**

## **POLICY STATEMENT**

### **ACCOMMODATION OF NEW UTILITIES ON LIMITED ACCESS RIGHT OF WAY**

This policy is established cognizant of 23 U.S.C., Parts 109 and 111, and Federal-aid regulations which govern use and points of access to any limited access right of way on the Federal Aid Highway System, and the February, 1989 publication of the American Association of State Highway and Transportation Officials (AASHTO) entitled "A Policy on the Accommodation of Utilities within Freeway Right-of-Way," which establishes conditions for such use by public and private utilities.

This policy applies to all limited access right of way on the state highway system of Florida.

It shall be the policy of the Florida Department of Transportation to prohibit new utilities from locating longitudinally within limited access right of way.

All utility accommodations other than new longitudinal on limited access right of way shall be in accordance with the Department's Utility Accommodation Guide.

This Policy disallows utility attachments to bridge structures on limited access right of way.

This policy prohibits new median accommodations on limited access right of way.

This policy does not apply to existing utilities or exceptions otherwise provided for existing utilities in the Utility Accommodation Guide, paragraph 4.B(2)(e).

This policy does not apply to utility lines for servicing facilities required for operating the transportation system on limited access right of way.