

Chapter 5 ACCOMMODATIONS STANDARDS

5.1 Basic Requirements

- 5.1.1 The basic requirements governing location of utility installations are described in the location criteria section of the **UAM**. The primary concerns in the design and location of utility installation are the preservation of the transportation facility and the safety of the transportation facility users. To facilitate management of the R/W resources and minimize construction conflicts, joint use of utility facilities is encouraged when accommodation can be achieved within or on existing ducts or poles, provided accommodation is compatible. An exception to joint use may be allowed based on the Permittee providing an engineering benefit cost study with a 2:1 ratio.

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

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

Clear Zone criteria have been developed and are found in Table 5.1.2.3. As shown in Figure 5.1.2.3, additional Clear Zone width is provided where non-recoverable terrain is within the Clear Zone value shown in Table 5.1.2.3. Also, Clear Zones may be widened based on crash history. It is critical that a Utility determine as soon as practical what Clear Zone values have been set for all locations along a project.

In cases where more than one UAO proposes an aerial installation on the same side of the **FDOT** R/W, a joint-use arrangement must be pursued by the utility agencies.

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

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

ground UAO facilities.

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

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

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

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

Shall not be located within the limited access right of way.
Shall not be located in the median.

All roadways with flush shoulders regardless of design speed and roadways with curb or curb and gutter with design speeds greater than forty five (45) mph:
As close as practical to the R/W line* or four (4) feet behind the back of the barriers that have been justified for other reasons.** If the distance from the edge of the traveled-way is less than the clear zone width in Table 5.1.2.3, the Utility must apply for an exception.

Curb or curb and gutter roadways with design speeds of forty five (45) mph or less:
As close as practical to the R/W line.* If a minimum distance of four (4) feet from the curb face to the fixed object is not practical, the Utility must apply for an exception. Placement within sidewalk shall be such that a minimum unobstructed sidewalk width of thirty-two (32) inches is provided. (Sidewalk width is measured exclusive of curb width.)

* "As close as practical to the R/W line" is determined by conditions such as, but not limited to:

- Aerial encroachment
- NESC, ADA, or other State or Federal applicable codes/regulations
- Conflicts with other existing overhead or underground facilities
- Trees on adjacent private property (where adequate future trimming would require encroachment on private property)
- Down guying requirements.

** Less than four (4) feet may be approved by exception.

Table - 5.1.2.3 Clear Zone Widths for flush shoulders on a straight alignment with slopes 1:4 or flatter. (New Construction rural or urban) Note: Design Speed is shown in the table. However, Posted Speed may be used as the default criteria for areas where the design speed is not published. Design Speed shall be used when available. See Section 5.1.1.

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

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

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

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

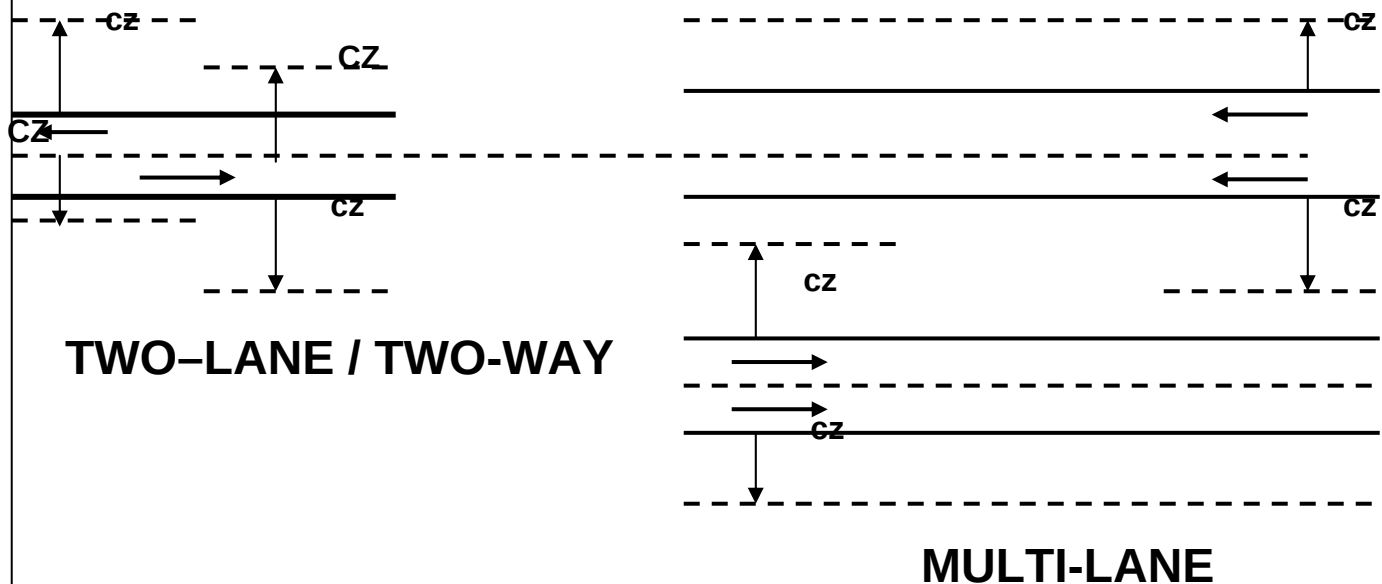


Table 5.1.2.4 Horizontal Clearance to Other Above Ground Fixed Objects

Minimum Horizontal Clearance to other above ground fixed objects:

Rural and Urban Flush Shoulders:
Outside the clear zone.

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

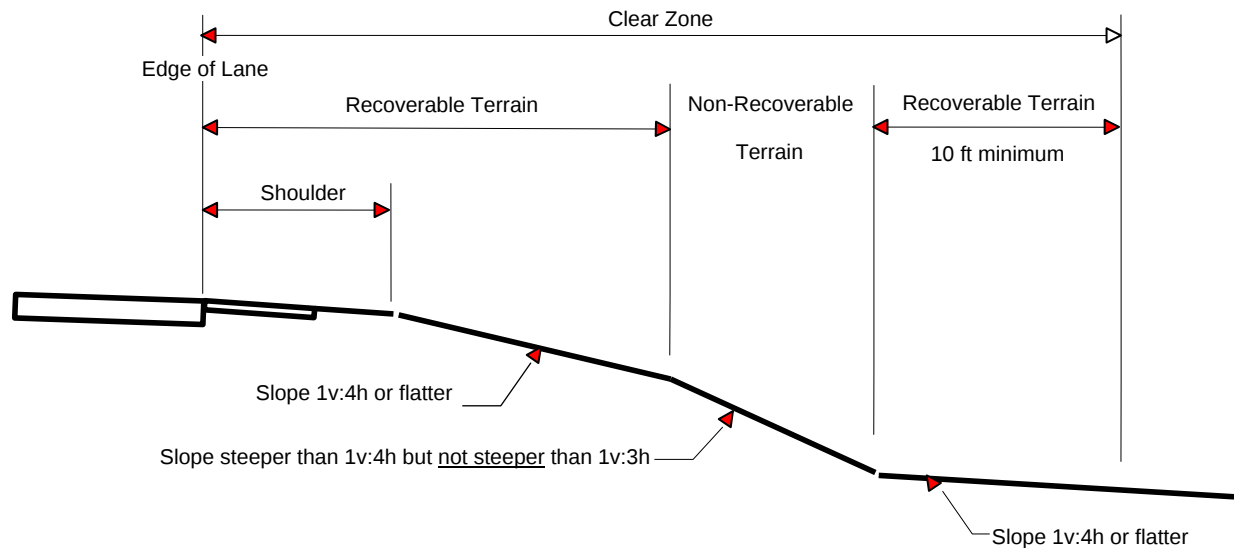


FIGURE 5.1.2.3 - RECOVERY AREA AND CLEAR ZONE WIDTH

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

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

- 5.1.3 Where feasible and practical, luminaires should be attached to utility poles that meet the offset criteria, thereby eliminating unnecessary poles along **FDOT** facilities. A second pole line to support illumination may be allowed where the need for the illumination is properly documented, traffic safety requirements are met, practical alternatives using existing infrastructure do not exist, and compliance with all other UAM requirements can be achieved.
- 5.1.4 Scenic enhancement shall be considered on permit applications. The type and size of utility facilities, along with the extent to which they are permitted along or within **FDOT** R/W, can materially alter the scenic quality, appearance and view of the transportation facility and adjacent areas. Therefore, additional controls are applicable in certain areas that have been acquired or set aside for their scenic quality. Such areas include scenic strips, overlooks, rest areas, recreation areas, and the **FDOT** R/W within the limits of public parks and historic sites.
- o New underground utility installations may be permitted within such lands where they do not require extensive removal or alteration of trees or other natural features visible to the transportation facility user, and where they do not impair the visual quality of the lands being traversed. New aerial installations are to be avoided at such locations where there is a feasible and prudent alternative to the use of such lands by the aerial facility. Exceptions will be considered for criteria listed in the bulleted items in Section 5.1.4:
 - Other locations are unusually difficult, or the cost is unreasonable or more undesirable from the standpoint of visual quality.
 - Undergrounding is not technically feasible or the cost is unreasonable.
 - The proposed installation will employ suitable designs and materials that give adequate attention to the visual qualities of the areas being traversed.
- These controls shall also be followed in the location and design of utility installations that are needed for transportation facility purposes, such as continuous highway lighting or to serve weight stations, rest areas, or recreation areas.
- 5.1.5 All new or relocated longitudinal above ground and underground utility facilities on roadway R/W and operating rail corridors shall be placed outside the toe of the front slope and as close to the edge of the R/W as practical. For non-operating rail corridors, the location of all new or relocated longitudinal above ground and underground utility facilities shall be determined based upon an evaluation of existing and future use of the facility.
- 5.1.6 Where an encasement is used and designed as a pressure vessel, the encasement pipe will have strength equal to or exceeding the carrier pipe. Where the casing is not a pressure vessel, the casing pipe shall be capable of supporting a minimum external load of 2200 pounds per square foot at thirty (30) inches minimum depth and other requirements found in the **UAM** or those of a railroad operating a rail corridor if more stringent.

Gas and liquid petroleum pipelines shall be designed and constructed to conform with **49**

CFR, Part 192, Transportation of Natural Gas by Pipeline or Part 195, Transportation of Liquids by Pipeline, as applicable and hereby incorporated by reference. The maximum allowable operating pressure of gas mains must be shown on permit applications.

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

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

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

5.2 Crossings

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

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

5.3 Limited Access Crossings

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

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

fence may be replaced with temporary fencing extending into the toe of slope and enclosing the entire work area.

- 5.3.2 Underground crossings in interchanges, where access to the utility may be gained without violation of limited access principles, shall be installed with sufficient strength to preserve the structural integrity of the paving and structure.
- 5.3.3 All piping must comply with the appropriate Federal and State regulations in effect at the time of permitted construction.
- 5.3.4 Since aerial crossings usually may not be accomplished without work inside the limited access facility, such crossings between interchanges should be minimized. Where necessary to construct a crossing between interchanges on an operational facility, a comprehensive plan for this work must be presented as part of the permit application.

No temporary supports will be permitted within the applicable clear zone or horizontal clearance requirements, unless placed behind existing guardrail at or exceeding the minimum offset or incorporated within an approved barrier system.

No work of any type, in connection with permitted construction will commence without a minimum of forty eight (48) hours advance notification to the local **FDOT** Maintenance or Resident Engineer's Office.

- 5.3.5 Where a permitted facility exists within the proposed R/W of a limited access facility and it can be serviced, maintained, and operated without interference to traffic on through traffic roadways or ramps, it may remain as long as it does not adversely affect the safety, design, construction, operation, maintenance, or stability of such limited access facility. See Chapter 12 of the **UAM** for Limited Access R/W provisions.
- 5.3.6 Expansion of a utility carried by an existing structure across a major valley or river may be permitted, provided the utility can be installed and serviced without interference to the motoring public.
- 5.3.7 Where a utility follows a crossroad or street that is carried over or under a limited access facility, provision should be made for the utility to cross the limited access facility at the location of the crossroads or streets in such manner that the utility could be serviced without interference to traffic on through-traffic roadways or ramps. Where distinct advantages and appreciable cost savings are affected by locating the utilities outside the R/W of the crossroad or street, they may be so located.
- 5.3.8 Except for necessary crossings, water canals, and irrigation ditches should be excluded from the limited access R/W. Crossings may be made by underground siphon, or through culverts, or bridges as appropriate to the size of canal, topographic conditions, and transportation safety aspects. In general, locations and structures are to be designed in the same manner, as are facilities for natural transverse drainage. All ingress and egress for servicing or patrolling such facilities shall be from outside the control of access lines.
- 5.3.9 When existing utilities are relocated or adjusted in conjunction with construction of a limited

access facility, provision should be made for known and planned expansion of the utility facilities, and particularly those underground. They should be planned to avoid interference with traffic at some future date when additional or new overhead or underground lines are installed.

5.3.10 Access for servicing a utility along or across a limited access facility should be limited to access via criteria in the bulleted items listed in Section 5.3.10:

- Frontage roads where provided.
- Nearby or adjacent public roads and streets.
- Trails along or near the **FDOT** limited access R/W lines, connecting only to an intersecting roadway or rail corridor, from any one or all of which entry may be made to the outer portion of the limited access R/W.

5.4 Attachments to Structures

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

- An obvious hazard to the public.
- The integrity of the structure will be affected.
- Inspection and maintenance operations will be unreasonably hindered.
- Aesthetics of structures, that are located in aesthetically sensitive environments, will be adversely affected.

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

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

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

5.4.2 Responsibility - The UAO is totally responsible for the design, safety, inspection, and

maintenance of its facilities and supporting hardware attached to **FDOT** bridge structures. If the **FDOT** determines that the utility may be accommodated, the Permittee's engineer has the responsibility to determine that the structure will support the utility in addition to other loads, in a safe manner and will not significantly reduce the live load capacity of the bridge. The **FDOT** is the final authority in all disputes that may develop. The UAO is advised to review the Five Year Work Program to determine if an existing bridge will be replaced, rehabilitated, or widened.

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

- Designs for utility attachments shall be in compliance with all applicable federal, state and local regulations, rules, and codes.
- No construction or maintenance will be accomplished upon a structure without written approval from the District Maintenance Engineer or designee. In emergencies, repairs may proceed after verbal approval from the District Maintenance Engineer or designee.
- Utilities attached to bridge structures shall maintain a vertical clearance at least equal to that of the structure.
- Attachments onto bridge structures, whose locations are environmentally classified as extremely aggressive, shall have all the metallic portions of the attachment hardware (hangers, bolts, etc.) fabricated from 316 stainless steel or other equal material as determined by the State Corrosion Engineer.

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

- Utility cables or conductors shall be encased in conduit so that maintenance can be accomplished from the ends of the structure. Conduits for utilities to be installed on bridges located in extremely aggressive areas shall be fabricated from non-metallic materials or other equal materials as determined by the State Corrosion Engineer.
- All electrical cables two (2) kv and above shall be shielded cable with a concentric neutral grounded at both ends of the bridge.
- Metallic pipes or conduits shall be electrically insulated from the structure by redundant insulators. Metallic pipes or conduits shall be supported by insulating pipe rollers or specifically designed sliding or elastomeric bearings. Insulating pipe rollers (rollers constructed from dielectric material) shall be used, unless the loads will permanently strain the roller material beyond the elastic limit.
- All utilities shall be isolated and insulated from the structure to ensure that corrosion cells do not develop because of the attachment of the utility.
- Utility attachments should be designed to pass through the back wall of the abutment,

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

- All pressure lines shall have shut-off systems so that the pipe segment at the bridge can be isolated.
- All lines carrying hazardous material (flammable, toxic, or corrosive) shall be designed to be in compliance with the **U.S. Department of Transportation Pipeline Safety Standards, 49 CFR, Part 192 or Part 195**, as applicable, for a class four location. Only steel pipe with welded or flange joints and conforming to API Standards shall be used.

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

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

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

5.5 Other Systems

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

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

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

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

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

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

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

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

5.6 Pavement Cutting / Trenching of a Transportation Facility

- 5.6.1 In any analysis of a request for open cutting or trenching, primary considerations will be given to the safety and convenience of the public. The applicant shall provide written justification for approval of open cutting.
- 5.6.2 Open cutting of existing pavement and side roads, less than five (5) years old, on **FDOT** R/W generally will only be considered with written justification to include an analysis of factors demonstrating that means other than open cutting would not be feasible. The factors shall include but not be limited to conditions such as: pavement re-construction is scheduled for the facility within the Five Year Work Program, subsurface obstructions, limited space for jacking and boring/directional boring, high water table, or substandard roadway surface.
- 5.6.3 Open cutting of existing paved driveway connections will be permitted, provided the users are notified by the Permittee seven (7) days in advance, access to the property is maintained for the users, and pavement is restored to the greater of an equivalent condition and type to what exists or in accordance with the **UAM**. Notification may be accomplished by the use of a door hanger type notice, or on-site signs, as appropriate and approved by the **FDOT**.
- 5.6.4 Where open cutting has been permitted, replacement of fill, base, and surface will be in accordance with the **UAM**, the **FDOT Standard Index No. 307**, in **Appendix B**, and any special provisions of the permit.

5.7 Utility Accommodation in the Vicinity of Mechanically Stabilized Earth

Walls or Proprietary Earth Walls (MSE)

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

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

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

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

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

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

Liquid or Gas pressure carrier installations:

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

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

Additional Coordination and Engineering Required:

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