pennsylvania
DEPARTMENT OF TRANSPORTATION

482-15-09

DATE: May 7, 2015

SUBJECT: Uncased Utility Crossings

TO: District Executives

FROM: R. Scott Christie., P.E. /s/
Deputy Secretary
Highway Administration

This Strike Off Letter institutes revisions to Publication 16, Design Manual Part 5, Utility Relocation, Chapter 1 – Uncased Crossings on pages 1-24 and 1-25. The changes include eliminating the need for casing when the applicable Federal and industry standards with respect to wall thickness is met for steel, plastic, ductile iron and reinforced concrete pipes that cross any state highway.

This policy will be incorporated into the next revision of Publication 16. This policy is effective on April 6, 2015. If you have any questions, please contact Mark J. Chappell, P.E. at (717) 787-8298.

Attachments

4824/MJC/lwd

cc: R. S. Christie, P.E., 8th Floor – CKB
R. Sigel, Division Administrator, FHWA
T. P. Macioce, P.E., 7th Floor. CKB
M.J. Chappell, P.E., 7th Floor - CKB
All Assistant District Executives – Design
All District Utility Relocation Administrators
W. J. Cressler, Chief Counsel, 9th Floor – CKB
G. M. D'Alfonso, Assistant Counsel in Charge, 9th Floor - CKB
L.W. Ditty, 7th Floor – CKB

d. Casing and Encasement. Each underground utility facility crossing a highway must be specifically designed by the utility for that location and requires the individual approval of the Department. Underground highway crossings must be cased or encased, except for those types of facility installations that may be permitted to be installed without casing or encasement. See Appendix A, Figures A-745 and A-746 for casing sizes, as well as typical sections showing minimum extent of casings.

(1) The method of construction and protection of each crossing must be individually considered.

(2) Casing should be considered for the following conditions:

(a) As an expediency in the insertion, removal, replacement or maintenance of the facility on freeways and at locations where future open cut trenching would be prohibited, such as near bridge footings, or where boring would be impossible, such as areas of rock.

(b) As a protection for carrier pipe from external loading or shock, either during or after construction of the highway.

(c) As a means of conveying leaking fluids or gases from directly beneath the highway to a point of venting at the right-of-way line or to a safe and permissible point of drainage.

- Encasement, casing and/or capping (a concrete slab over a facility for protection) should be considered for existing facilities that require protection but cannot be relocated, adjusted or replaced.

- Protection of existing facilities that cannot be relocated or adjusted may be provided by construction of a plate arch, monolithic arch or box around the facility in its existing location. Consideration may also be given to the installation of Department approved allied mechanical protection such as concrete slabs or bridging, providing the utility agrees that future repairs or replacement will be accomplished without open cutting of pavement or shoulders.

- Casings must be designed to support the dead loads imposed by earth, subbase, pavement, etc., and vehicular loads thereon, be capable of withstanding any internal pressures and, as a minimum, must equal the structural requirements for highway drainage facilities.

- Casings must be of durable materials with long service life expectancy and comply with industry codes and governmental regulations.

- Casings, encasement or other protection will normally extend a minimum of 10 feet beyond the toe of slope. Protection may be required to extend to right-of-way lines for access purposes or to allow for future widening of the highway.

- Casings must be sealed, vented, and drained in the manner prescribed by industry codes and governmental regulations.

- Uncased crossings may be considered for utility lines carrying electric, telecommunication systems, water, gas, petroleum and petroleum products, steam, sanitary sewage and chemical lines provided they:

(1) If using steel carrier pipes, the pipes must be cathodically protected coated welded steel pipes.

(2) Meet the requirement of the applicable Federal and industry standards with respect to wall thickness for steel, plastic, ductile iron and reinforced concrete pipes.

(3) Are designed for operating stress levels in accordance with Federal Pipeline Safety Regulations.

(4) Agree that, if in the future the crossing requires replacement, the replacement line will be installed at a new location.

A utility proposing to install an uncased crossing must provide a written statement of certification that all applicable conditions and provisions contained in items 1 through 4 above will be complied with for each crossing.

- On divided highways with a median width in excess of 80 feet casings or encasement will only be required under the traveled way and not through the median area.
- Pipelines located in casings or galleries will be designed to withstand internal pressure and to resist internal and external corrosion.
- Pipe casings of gas lines over 4 inches in diameter which carry gases lighter than air must be sealed and provided with a screened vent on one end at or outside of the highway right-of-way line.
- Casings are not required for a service line connecting a single or multiple customer to a utility's distribution facility.

E. Replacement Policy for Utility Facilities

1. Replacement of Existing Aerial Facilities with Underground on Highway Relocations. This policy will apply where a utility proposes to replace existing aerial facilities with decreased span lengths or with underground facilities required by highway construction projects.

a. Crossing Facilities Underground Replacing Aerial. Where highway right-of-way widths exceed the utility's design criteria for maximum span length limits, the utility may construct underground to replace existing aerial facilities. The Department will consider such underground replacements as facility upgrading unless the underground is, in the opinion of the Department, required by reason of the highway project, e.g.: height of embankment, width of right-of-way, safety, aesthetics, etc.

Department policy does not consider putting utility facilities underground for aesthetic reasons to be a betterment for a utility if the undergrounding is, in the opinion of the Department, required by reason of the highway project.

This does not apply to the following situations:

- Where the project is funded with transportation enhancement monies.
- Where the Department refuses to allow occupancy at a new location within highway right-of-way for safety reasons.
- Where a utility proposes to replace existing aerial facilities with underground facilities not required by highway construction projects.

b. Installation of Spare Duct when Replacing Aerial with Underground Utility Facilities. When it becomes necessary to install underground facilities in order to replace aerial facilities as a result of the proposed highway construction, the utility may install one spare duct for each duct in use, unless the utility documents that its normal policy requires additional ducts.

The proposed use of underground to replace existing aerial facilities should be indicated by the utility at the Initial Design Stage Meeting and so noted in meeting minutes.

At the Final Design Stage Meeting, the utility will confirm the use of underground. The extent of Department reimbursement will be dependent on the utility's justification for the necessity of underground by reason of the highway project. The Central Office Utility Relocation Unit is authorized to approve Department reimbursement and their approval should be indicated in the meeting minutes along with the utility's justification including cost comparisons between aerial and underground. When the utility is unable to satisfactorily justify the need for underground at the Final Design Stage Meeting, the utility may request further consideration by submitting written justification and cost comparisons to the District for Central Office determination.

Should the utility elect to install underground to replace aerial facilities, the utility must submit cost comparisons with its Preliminary Estimate. The estimate will detail the cost difference between underground and aerial with the resultant additional costs shown as betterment on the estimate form.

The Central Office Utility Relocation Unit must give concurrence on all replacement of existing aerial facilities with underground on highway relocations.

To assure approval of the reimbursable agreement, the above cost comparison will always be required.

2. Replacement or Installation of Poles within Utility Pole Crash Clusters. The District will not approve a utility highway occupancy permit application for the installation and/or replacement of poles within the areas of the utility pole crash cluster without review and concurrence of the District Utility and Traffic Units.

This is not intended to eliminate or hinder the utility's use of their Emergency Permit Cards, nor is it intended to establish a policy under which a utility could not replace existing poles within a cluster area. The intent is to have the facilities installed in the safest location possible that increases the existing clear zone area and provides a safer condition for the traveling public.

A pole that requires replacement in an emergency situation may be repaired by the utility under authority of the Department's Emergency Permit Card with subsequent application made to the Department under current highway occupancy regulations. Where practical, a pole should be replaced in a location that complies with the provisions of this policy. However, the pole may be replaced in its existing location as defined in Section 1.3.C.2.a and f, providing there is no record of a crash involving the pole and the Department has determined that the relocation to another protected location is not feasible from an economic or engineering standpoint (see Appendix A, Figure A-748 for Comprehensive Pole Safety Policy).

3. Replacement of Crash-Damaged Poles. A utility pole requiring replacement due to vehicle crash is repaired or replaced under authority of the Department's Emergency Permit Card for Repairs and followed by submissions of an Application for Highway Occupancy Permit.

Prior to approval of the final location of a crash-damaged pole, the District personnel must determine the acceptability of the replacement pole(s) location in regard to traffic safety.

It is the responsibility of the District to thoroughly investigate permit applications relating to crash-damaged pole replacements and to consult the District Utility Relocation Administrator and Traffic Safety Engineer to determine the acceptability of pole locations.

When a pole was originally located in a position that complied with the provisions of this policy and there is no record of previous crash involvement, the facility may be permitted to remain in that location. However, prior to final location approval of any crash-damaged pole, the site will be field viewed by the Department's District Office personnel to determine whether the facility should be relocated or other provisions made in the interest of safety and the feasibility of such relocation (see Appendix A, Figure A-748 Comprehensive Pole Safety Policy).

F. Utility Corridor

1. Establishment of Utility Corridors on Freeways Joint Development and Multiple Use. In specific situations and under strictly controlled conditions, the Department may provide for joint development and multiple use of limited access highway right-of-way by establishing a longitudinal utility corridor parallel with the highway centerline within which trunkline or transmission type facilities may be installed. Consideration for approval of such corridors will be based on the assurance of satisfactory compliance with the requirements of FHWA's "Installation Within Freeways", and the Department's accommodation policy as defined in this Chapter.

The creation of a utility corridor within limited access right-of-way requires revision of the highway right-of-way and construction plans, written agreements and special highway occupancy permits, in addition to conformance to this policy and approval by the Department's District Office. Submissions recommending establishment of a utility corridor must contain sufficient details on each of the following conditions and must be listed in the same alphabetical order.

For the purpose of this policy, the word "freeway" will mean any limited access highway and "freeway right-of-way" is the full highway right-of-way acquired or to be acquired for construction of the freeway.

a. On existing freeways, the utility may request establishment of a corridor by an inward relocation of the limited access line a minimum distance to the extent necessary to permit installation of the utility facility between the relocated limited access line and the existing freeway right-of-way line.

The District Utility Relocation Unit is to establish, through their District Fiscal Unit, a State Project Number, with a special Program Number of 612 (allotment), as soon as a utility requests a corridor be established. This enables the Department to recover monies expended by Department personnel (District & Central Office) for the establishment of the corridor. Costs reimbursable from the utility company are for time expended by Department personnel, materials furnished for engineering, design, highway plan changes (R/W and Construction), right-of-way plan recording, permit fees, inspection cost, furnished material (example mylars, paper, etc.) and any other related items. Upon approval and completion of all the utility's work, the District Utility Relocation Unit must notify the District Fiscal Unit to process all costs incurred under this special S.P.N. for billing to the utility company.

The Utility must agree, in writing, to pay for these costs when requesting this corridor. The District letter to Central Office Utility Relocation Unit will include the S.P.N. with a statement that the utility agreed by letter to reimburse the Department for cost incurred, and the corridor will be established by an inward relocation of the Limited Access Line to allow the utility to occupy highway right-of-way outside the Limited Access R/W. (See Appendix A, Figure A - 750)

On freeways under design, the utility may request or the Department may suggest that a corridor be established by designing the limited access line inward of the required freeway right-of-way line a minimum distance to the extent necessary to permit installation of the utility facility outside the limited access lines. Excess freeway right-of-way will not be acquired for establishment of this utility strip and the highway designer must verify that the width of right-of-way acquired is the minimum needed for the construction, operation and maintenance of the freeway.

All requests for establishing a utility corridor must be in writing from the utility. When the Department recommends a corridor be established, the utility must concur with this recommendation, in writing. The establishment of the corridor must be shown on the right-of-way and construction plans by plotting the limited access line inward of the required freeway right-of-way line. The District must assure and/or concur that excess freeway right-of-way will not be acquired. The highway designer must verify to the District Utility Relocation Unit that the width of right-of-way acquired is that needed for the construction, operation and maintenance of the freeway right-of-way. The letter from the District to the Central Office Utility Relocation Unit must state that excess right-of-way is not being acquired, the designer has verified this data, and the plans will reflect the limited access line by an inward move.

b. The Department must ascertain that the freeway right-of-way is of ample width to accommodate utility facilities without adverse effect to the design, construction, integrity, and operational characteristics of the freeway and that this right-of-way will not be needed for the foreseeable expansion of the freeway. The utility must indicate its intent to enter into a written agreement that contains specific provisions regarding the maintenance of its facilities within the utility corridor.

c. The utility must assure and the Department must verify that there are no locations where it is feasible to accommodate utilities on frontage roads or adjacent public roads or streets.

d. The utility must acknowledge that the Department will retain ownership of the freeway right-of-way and the control and regulation of the use and occupancy of that right-of-way by utilities will be specified by written agreement. Access for service and maintenance of utility facilities will not be permitted from the thru traffic roadways, or ramps. Access provisions must be specified by agreement.

e. It must be understood that existing fences will be retained or planned fences will be installed at the freeway right-of-way line.

f. The utility is required to show by detailed submission that the proposed installation on the freeway right-of-way within the proposed corridor is the most feasible and prudent location available from the

standpoint of the highway user and utility consumer. The answering of this item must include engineering and economic justification.

g. The lateral location and depth of the proposed underground facilities and the lateral location and vertical clearance of proposed aerial facilities must be shown in detail on highway plans and be in accordance with the Department's approved accommodation policy, 23 CFR Part 645 and the AASHTO policy. The District must concur and submit two (2) copies of detailed highway right-of-way plans and cross sections showing the utility's proposed installation.

h. Aerial installations will be limited to self-supporting single pole construction, with vertical configuration of conductors and cables where possible. No more than one line of support poles for aerial facilities will be permitted within the utility corridor.

i. The utility must assure the Department that only trunkline or transmission type facilities will be installed and that service connections to utility consumers will not be permitted from the utility corridor.

j. The District Environmental Manager must assure that the proper approval is obtained for the level of environmental clearance required. Such approvals may involve the Bureau of Project Delivery and where applicable, the FHWA. The effect of the utility installation on wetlands and agricultural lands must be specifically addressed.

k. Where the freeway passes through or along areas of scenic enhancement and natural beauty as described in 23 CFR Part 645, utility installations must be made as provided for therein.

l. The utility must indicate the facilities installed within the utility corridor must be of durable materials designed for long service life expectancy and relatively free from routine servicing and maintenance.

Regardless of the situation, whether the utility requests to occupy an existing freeway or there is a mutual agreement on the need for such occupancy on a proposed freeway, the benefits of this policy are to the utility consumer and the highway user. The success of this policy is dependent on the cooperation of the utility and Department personnel involved.