

TEXAS TRANSPORTATION COMMISSION

ALL Counties

MINUTE ORDER

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ALL Districts

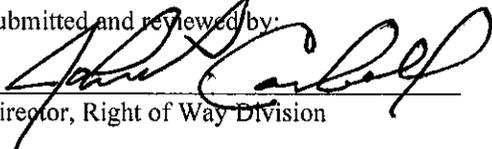
The Texas Transportation Commission (commission) finds it necessary to adopt new Subchapter O, Utility Accommodation for Rail Facilities, new §§21.901 – 21.911, relating to rail and utility safety, to be codified under Title 43, Texas Administrative Code, Part 1.

The preamble and the adopted new sections, attached to this minute order as Exhibits A and B, are incorporated by reference as though set forth at length verbatim in this minute order.

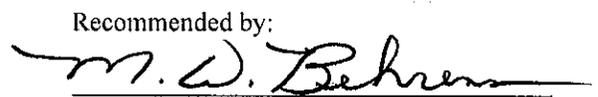
IT IS THEREFORE ORDERED by the commission that the new §§21.901 – 21.911 are adopted and are authorized for filing with the Office of the Secretary of State.

The executive director is directed to take the necessary steps to implement the actions as ordered in this minute order, pursuant to the requirements of the Administrative Procedure Act, Government Code, Chapter 2001.

Submitted and reviewed by:

  
Director, Right of Way Division

Recommended by:

  
Executive Director

**110478 MAR 30 06**

Minute  
Number

Date  
Passed

1 Adoption Preamble

2 The Texas Department of Transportation (department) adopts new  
3 Subchapter O, Utility Accommodation for Rail Facilities, new  
4 §§21.901 - 21.911, concerning rail and utility safety. The new  
5 §§21.901 - 21.911 are adopted without changes to the proposed  
6 text as published in the December 30, 2005 issue of the *Texas*  
7 *Register* (30 TexReg 8837) and will not be republished.

8

9 EXPLANATION OF ADOPTED NEW SECTIONS

10 With the department's newly enhanced statutory authority to own  
11 and operate rail facilities, and a utility's current authority  
12 to locate facilities along state railroad right of way, guidance  
13 is needed to insure the safety of rail and utility facilities.  
14 The new rules will allow the two authorities to co-operatively  
15 function in the limited railroad right of way by prescribing  
16 safety standards for the installation of utility facilities.

17

18 New §21.901 identifies the purpose of the subchapter, which is  
19 to insure the safety of the state railroad right of way when  
20 utility facilities are placed in the right of way.

21

22 New §21.902 defines words and terms used in this subchapter.  
23 The definitions clarify the engineering terms, utility  
24 procedures and processes, job functions, and occupational and  
25 departmental titles used in the subchapter.

1

2 New §21.903 allows exceptions to the rules when extreme  
3 hardships or unusual conditions exist. Exceptions must be  
4 recommended by the district engineer and authorized by the Right  
5 of Way Division Director.

6

7 New §21.904 requires the execution of agreements if a utility  
8 installs, relocates, or maintains facilities along state  
9 railroad right of way. The agreements act as both a notice of  
10 installation and a vehicle for utilities to apprise the  
11 department of the type and location of the facilities being  
12 installed.

13

14 New §21.905 describes the agreement utilities must enter into  
15 with the department in order to install, relocate, or maintain  
16 lines on department property.

17

18 New §21.906 describes general design requirements for the  
19 installation, maintenance, and relocation of utilities within  
20 state railroad right of way. The section incorporates published  
21 utility industry safety standards to serve as minimum guidelines  
22 for utility facility installations.

23

24 New §21.907 requires occupying utilities to maintain their  
25 facilities in a good state of repair and outlines measures to be

1 taken by a utility in an emergency maintenance situation. These  
2 standards will allow the department to more efficiently manage  
3 and protect the right of way.

4  
5 New §21.908 requires a utility to take steps to preserve,  
6 restore, and clean up state railroad right of way. The  
7 subsection includes requirements to restore disturbed areas,  
8 provide for drainage of the railroad facility, clean up the  
9 right of way after installation or maintenance of utility  
10 facilities, and control vegetation. These provisions are  
11 designed to preserve the safety of the facility as well as to  
12 protect the right of way from damage.

13  
14 New §21.909 describes the requirements for the installation,  
15 maintenance, and relocation of utility facilities paralleling  
16 state railroad property. The section addresses the safety  
17 standards for both overhead and underground installations.

18  
19 New §21.910 describes the requirements for the installation,  
20 maintenance, and relocation of utility facilities crossing state  
21 railroad property. The section addresses the safety standards  
22 for overhead and underground installations with an emphasis on  
23 specifications regarding the design, pipeline thickness, and  
24 pipeline encasement necessary for underground installations.

25

1 New §21.911 requires the installing utilities to submit detailed  
2 plans and receive departmental approval for their proposed  
3 facilities. This provision is designed to allow the department  
4 to better manage its right of way.

5

6 COMMENTS

7 No comments on the proposed new sections were received.

8

9 STATUTORY AUTHORITY

10 The new sections are adopted under Transportation Code,  
11 §201.101, which provides the Texas Transportation Commission  
12 (commission) with the authority to establish rules for the  
13 conduct of the work of the department, and more specifically,  
14 Transportation Code, §91.003, which provides the commission with  
15 the authority to establish rules to implement Transportation  
16 Code, Chapter 91.

17

18 CROSS REFERENCE TO STATUTE

19 Transportation Code, §91.105.

1 SUBCHAPTER O. UTILITY ACCOMMODATION FOR RAIL FACILITIES

2 §21.901. Purpose. This subchapter prescribes the  
3 accommodation, location, method of installation, adjustments,  
4 removal, relocation, and maintenance of utility facilities  
5 within state railroad right of way. It was developed in the  
6 interest of safety, protection, utilization, and future  
7 development of state railroad right of way with due  
8 consideration given to public service afforded by adequate and  
9 economical utility installations.

10

11 §21.902. Definitions. The following words and terms, when used  
12 in this subchapter, shall have the following meanings, unless  
13 the context clearly indicates otherwise.

14 (1) AREMA--American Railroad Engineering and Maintenance  
15 of Way Association.

16 (2) ANSI--American National Standards Institute.

17 (3) Backfill--Replacement of soil around and over an  
18 underground utility facility.

19 (4) BNG--Below natural grade.

20 (5) Boring--Piercing a hole under the surface of the  
21 ground without disturbing the earth surrounding the hole.

22 (6) Carrier--Pipe directly enclosing a transmitted liquid  
23 or gas.

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1 (7) Casing--A pipe enclosing a carrier.

2 (8) Coating--Material applied to or wrapped around a  
3 pipe.

4 (9) Communication line--Fiber optic, telephone cable, and  
5 similar lines, not exceeding 400 volts to ground or 750 volts  
6 between any two points of the circuit, the transmittal power of  
7 which does not exceed 150 watts.

8 (10) Conduit or duct--An enclosed tubular runway for  
9 protecting wires or cables.

10 (11) Cover--The depth of material placed over a utility,  
11 measured from top of utility casing or carrier pipe to the  
12 natural ground line or construction line above the utility.

13 (12) Department--The Texas Department of Transportation.

14 (13) District engineer--The chief administrative officer  
15 in charge of a district, or his or her designee.

16 (14) Electric supply--Electric light, power supply, and  
17 trolley lines, regardless of voltage used for transmitting a  
18 supply of electrical energy.

19 (15) Encasement--Structural element surrounding a pipe or  
20 cable.

21 (16) Flexible casing pipe--A plastic, fiberglass, or  
22 metallic pipe, including copper or aluminum pipe, having a large  
23 ratio of diameter to wall thickness that can be deformed without

1 undue stress.

2 (17) Grounded--Connected to the earth or to some extended  
3 conducting body that intentionally or accidentally is connected  
4 with the earth.

5 (18) Grout--A cement mortar or slurry of fine sand or  
6 clay as conditions govern.

7 (19) Jack-and-bore--The installation method whereby the  
8 leading edge of the jacked pipe is well ahead of the cutting  
9 face of the auger bit and the auger removes waste from inside  
10 the pipe as it is being jacked.

11 (20) Jacking--The installation of small pipes by the use  
12 of hydraulic jacks or rams to push the pipe under the traveled  
13 surface of a road, railroad roadbed, or other facility.

14 (21) Manhole--An opening to an underground utility system  
15 that workers or others may enter for the purpose of maintaining,  
16 inspecting, or making installations.

17 (22) Pipe--A tubular product made as a production item  
18 for sale, except for cylinders formed from plate in the course  
19 of fabrication of auxiliary equipment.

20 (23) Pressure--Relative internal pressure in PSI (pounds  
21 per square inch) gauge.

22 (24) Right of way--A general term denoting land or a  
23 property interest in the land, usually in a strip, used for

1 railroad transportation purposes.

2 (25) Seal--A material placed between the carrier pipe and  
3 casing to prevent the intrusion of water, where ends of casing  
4 are below the ground surface.

5 (26) Shoulder--That portion of the roadbed outside the  
6 ballast.

7 (27) Trenching--Installing in a narrow excavation.

8 (28) Tunneling--Excavating the earth ahead of a large  
9 diameter pipe by one or more of the following processes.

10 (A) The earth ahead of the pipe is excavated using hand  
11 tools while the pipe is pushed through the holes by means of  
12 jacks, rams, or other mechanical devices.

13 (B) The excavation is carried on simultaneously with  
14 the installation of tunnel liner plates.

15 (C) The tunnel liner plates are installed immediately  
16 behind the excavation as it progresses and are assembled  
17 completely away from the inside.

18 (29) Utility--All publicly or cooperatively owned lines,  
19 facilities, and systems for producing, transmitting, or  
20 distributing communications, power, electricity, light, heat,  
21 gas, oil, crude products, water, steam, waste, storm water, and  
22 other similar commodities that serve the public.

23

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1 §21.903. Applicability. For railroads under department  
2 jurisdiction, the provisions of this subchapter apply to:

3 (1) new utility installations, including replacement of  
4 an existing facility with the same facility or a facility of a  
5 different type or design;

6 (2) additions to existing utility installations;

7 (3) adjustment and relocation of utilities; and

8 (4) existing or planned utility installations for which  
9 agreements with the department were entered into prior to the  
10 date of the adoption of this subchapter.

11  
12 §21.904. Exceptions. Exceptions to any design, location, or  
13 method of installation provision in this subchapter may be  
14 authorized by the department. Requests for exceptions will be  
15 considered only where it is shown that extreme hardship or  
16 unusual conditions provide justification and where alternate  
17 measures can be prescribed in keeping with the intent of this  
18 subchapter. All requests for exceptions shall be fully  
19 documented including design data, cost comparisons, and other  
20 pertinent information. Exceptions must be recommended by the  
21 district engineer and authorized by the director of the Right of  
22 Way Division.

23

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1 §21.905. Requests. Joint-use agreements are required when  
2 utility facilities are installed, relocated, or maintained along  
3 or across department property. Approval of requests to install,  
4 maintain, or relocate a utility facility within department  
5 property shall be evidenced by an agreement. Requests for  
6 utility facility installation along with plans for the proposed  
7 installation shall be submitted to the department at least 30  
8 days prior to the commencing of construction. It is the  
9 utility's responsibility to inform the department, in writing,  
10 of any name, ownership, or address change.

11

12 §21.906. Design.

13 (a) Location.

14 (1) Utility lines shall be located to avoid or minimize  
15 the need for adjustments for future railroad improvements and to  
16 permit access to the utility lines for maintenance with minimum  
17 interference to railroad traffic.

18 (2) Pipelines may be installed under tracks by boring,  
19 jacking, or in some cases, open-trenching. Water jetting and  
20 puddling are not permitted. Holes may be mechanically bored and  
21 cased using a cutting head and continuous auger mounted inside  
22 of the casing. Small diameter holes may be augered and the  
23 casing or utility facility pushed in later.

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1           (3) Where practical, pipelines carrying liquefied  
2 petroleum gas shall cross the railway where the tracks are  
3 carried on an embankment.

4           (4) All high-pressure pipelines of greater than 60-psi  
5 internal pressure, except those in public roads, shall be  
6 prominently marked at the property line, on both sides of the  
7 track for under crossings, by signs that state the size of the  
8 line and its depth.

9           (5) The utility is not permitted to attach to bridges or  
10 route facilities through drainage structures or cattle passes.  
11 Utilities are not to be attached to other railroad structures  
12 without the written approval of the department.

13           (6) As a general rule, overhead power, communication, and  
14 cable television line crossings at bridges must be avoided.

15           (b) Design considerations.

16           (1) The design of any utility installation will be the  
17 responsibility of the utility. An installation within state  
18 railroad right of way must be reviewed and approved by the  
19 department with regard to location and the manner of adjustment.  
20 This includes the measures to be taken to preserve the safety  
21 and flow of rail traffic, structural integrity of the roadway or  
22 structure, ease of maintenance, and the integrity of the utility  
23 facility. Utility installations on, over, or under state

1 railroad right of way shall conform with this subchapter or, as  
2 a minimum, the appropriate requirements outlined in the  
3 following:

4 (A) Safety Rules for the Installation and Maintenance  
5 of Electric Supply and Communication Lines-National Electric  
6 Safety Code;

7 (B) Title 49 C.F.R. Part 192, Transportation of Natural  
8 and Other Gas by Pipeline: Minimum Federal Safety Standards;

9 (C) Title 49 C.F.R. Part 195, Transportation of  
10 Hazardous Liquids by Pipelines;

11 (D) American Society for Testing and Materials (ASTM)  
12 Specifications;

13 (E) Texas Manual on Uniform Traffic Control Devices;  
14 and

15 (F) Rules and Regulations for Public Water Systems,  
16 Texas Commission on Environmental Quality.

17 (2) All utility installations on, over, or under state  
18 railroad right of way shall be of durable materials designed for  
19 long service life and relatively free from routine servicing and  
20 maintenance. All utility installations shall comply with  
21 current applicable material specifications and codes.

22 (3) References given to any manual, publication, or  
23 specification are intended to be the most current edition. If a

1 conflict occurs between any publication and this subchapter, the  
2 most restrictive specification will be used.

3 (4) For all boring and jacking installations greater than  
4 26 inches in diameter, and at a depth of between five and one-  
5 half feet and 10 feet below top of tie, a geotechnical study  
6 will be performed to determine the presence of granular material  
7 and high water table elevation at the sole expense of the  
8 utility. The study will include recommendations and a plan for  
9 a procedure to prevent failure and a collapse of the bore. Core  
10 samples are to be taken near the ends of tie at the proposed  
11 location, at least as deep as the bottom of the proposed  
12 horizontal bore. Test results must be reviewed and approved by  
13 the department prior to boring activities commencing. The  
14 department reserves the right, based on the test results, to  
15 require the utility, at its own expense, to select an alternate  
16 location or to implement additional engineering specifications  
17 in order to utilize the desired location.

18 (c) Safety flagging.

19 (1) When work is performed within 25 feet of the  
20 centerline of the track, railroad flagging will be required.

21 (2) Flagging services will be conducted in an industry  
22 approved manner subject to the approval of the department.

23 (d) Material storage. Storage of materials and parking of

1 equipment and vehicles not in use in actual utility work is not  
2 permitted on state railroad right of way.

3

4 §21.907. Maintenance and Servicing Utilities.

5 (a) Regular maintenance.

6 (1) Maintenance of the utility facility is the  
7 responsibility of the utility owner.

8 (2) Maintenance must be performed to keep the facility in  
9 an as-constructed condition, and in a good state of repair in  
10 accordance with the requirements of applicable federal, state,  
11 and local laws, regulatory standards, and utility codes.

12 (3) The utility shall replace and stabilize all earth  
13 cover and vegetation when it has eroded over an underground  
14 utility facility where such erosion is due to, or caused by, the  
15 placement or existence of the underground utility facility.

16 (4) The utility shall be responsible for correcting any  
17 settlement of backfill, fills, and embankments that may occur.

18 (b) Emergency maintenance.

19 (1) Emergency maintenance of utilities located on state  
20 railroad right of way is permissible if an emergency exists that  
21 endangers the life, safety, or welfare of the public and  
22 requires immediate repair. The utility shall take all necessary  
23 and reasonable safety measures to protect the public and the

1 railroad.

2 (2) The utility will advise the department of the need  
3 for emergency maintenance as soon as possible and will restore  
4 the right of way and facilities to their original condition.

5

6 \$21.908. Preservation, Restoration, and Cleanup.

7 (a) Disturbed areas.

8 (1) Areas of state railroad right of way disturbed by the  
9 installation, maintenance, removal, or relocation of utilities  
10 shall be kept to a minimum.

11 (2) Disturbed areas shall be returned to normal grade and  
12 elevation, with compaction of backfill material, and all excess  
13 or undesirable material removed by the utility.

14 (3) The utility shall provide protection against erosion  
15 in disturbed areas subject to erosion. The protection may be in  
16 the form of rock riprap, wash checks, hay or straw cover, or  
17 other material that is approved by the department and does not  
18 interfere with railroad maintenance.

19 (b) Drainage facilities. Care shall be taken to avoid  
20 disturbing existing drainage facilities. Underground utility  
21 facilities shall be bedded with pervious material and outlets  
22 provided for entrapped water. Under drains shall be installed  
23 where necessary.

1 (c) Cleanup. Unused material or debris shall be removed  
2 from the work site area. At the end of every construction day,  
3 construction equipment and materials shall be removed as far  
4 from the operating railroad tracks as possible, a minimum of 25  
5 feet from the centerline.

6 (d) Vegetation control.

7 (1) When utility installation is complete, the utility  
8 shall return the railroad right of way to a condition at least  
9 equal to its original condition, including reseeding or  
10 resodding to prevent erosion.

11 (2) The department may specify the extent and methods of  
12 tree, bush, shrubbery, or any other aesthetic feature's removal,  
13 trimming, or replacement in conjunction with paragraph (1) of  
14 this subsection.

15 (3) Pruning of trees shall comply with the department's  
16 Roadside Vegetation Management Manual. When unapproved pruning  
17 or cutting or damage occurs, the utility shall be responsible  
18 for the replacement of trees or for damages to existing trees  
19 and bushes.

20

21 §21.909. Utilities Paralleling Railroad Property.

22 (a) General Provisions. Any utility line greater than 500  
23 feet in length will be considered a parallel line and is to be

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1 located on uniform alignment, within 10 feet or less of the  
2 property line so as to provide a safe environment and to  
3 preserve space for future railroad improvements. Utilities will  
4 be located so as to provide a safe environment and shall conform  
5 to the current National Electrical Safety Code, American  
6 Waterworks Association Specifications, Federal Pipeline Safety  
7 Regulations, and The American Railway Engineering and  
8 Maintenance Association Specifications. If laws or orders of  
9 public authority prescribe a higher degree of protection, then  
10 the higher degree of protection prescribed shall supersede the  
11 provisions of this subchapter.

12 (b) Overhead installations.

13 (1) A minimum of four feet clearance is required above  
14 signal and communication lines.

15 (2) Poles must be located at least 50 feet from the  
16 centerline of the railroad main, branch, and running tracks, CTC  
17 sidings, and heavy tonnage spurs. Pole location adjacent to  
18 industry tracks must provide at least a 10-foot clearance from  
19 the centerline of the track, when measured at right angles. If  
20 located adjacent to curved track, then the clearance must be  
21 increased at a rate of one and one-half inches per degree of  
22 curved track.

23 (3) Regardless of the voltage, unguyed poles shall be

1 located a minimum distance from the centerline of any track,  
2 equal to the height of the pole above the ground-line plus 10  
3 feet. If guy wiring is required, the guys shall be placed in  
4 such a manner as to keep the pole from leaning or falling in the  
5 direction of the tracks.

6 (4) Poles, including steel poles, must be located a  
7 minimum distance from the railroad signal and communication line  
8 equal to the height of the pole above the ground-line, or must  
9 be guyed at right angles to the lines. High voltage towers,  
10 34.5kV and higher, must be located off railroad right of way.

11 (5) For proposed electrical lines paralleling tracks, the  
12 department may request that an inductive interference study be  
13 performed at the expense of the utility. Inductive interference  
14 from certain lines has the potential to disrupt the signal  
15 system in the track causing failures in the track signals and  
16 highway grade crossing warning devices. The district engineer  
17 may require an inductive interference study based on the  
18 proposed proximity of high voltage lines to other utility lines.

19 (c) Underground installations.

20 (1) Underground utility installations shall be located on  
21 top of the back slope at the outer limits of the railroad  
22 property.

23 (2) Pipelines laid longitudinally on state railroad right

1 of way shall be located as far as practical from any tracks or  
2 other important structures. If located within 40 feet of the  
3 centerline of any track, the carrier pipe shall be encased or be  
4 of special design as approved by the district engineer.

5 (3) If the pipeline is located 40 feet or less from the  
6 centerline of the track, the pipeline shall be encased in a  
7 steel pipe subject to the approval of the department. No pipe  
8 may be placed closer than 25 feet from the centerline of the  
9 track. The pipe must be buried with a minimum cover of three  
10 feet.

11 (A) If less than minimum depth is necessary because of  
12 existing utilities, water table, ordinance, or similar reasons,  
13 the line shall be rerouted.

14 (B) Locations where it will be difficult to attain  
15 minimum depth due to wet or rocky terrain shall be avoided. Any  
16 location change from the plans must be approved by the  
17 department.

18 (4) The use of plastic carrier pipe for sewer, water,  
19 natural gas, and other liquids is acceptable under specific  
20 circumstances. The use of plastic pipe is satisfactory if the  
21 pipe is designed to meet AREMA and all applicable federal and  
22 state codes, and if the carrier pipe is properly encased with a  
23 steel casing pipe for the entire length on state railroad right

1 of way.

2 (5) Manholes shall be limited to those necessary for  
3 installation and maintenance of underground lines and may vary  
4 as to size and shape depending on the type of utility they  
5 serve. To conserve space, their dimensions should be minimally  
6 acceptable by good engineering and safety standards. The only  
7 equipment to be installed in manholes located on the right of  
8 way is that which is essential to the normal flow of the  
9 utility, such as circuit reclosers, cable splices, relays,  
10 valves, and regulators. Other equipment shall be located  
11 outside the limits of the state railroad right of way. Manholes  
12 shall not protrude above the surrounding ground nor be located  
13 in the shoulder, shoulder slope, ditch, back slope, or within 25  
14 feet of the centerline of the track without the approval of the  
15 department.

16 (6) Electric power lines.

17 (A) A minimum depth of three feet BNG will be  
18 maintained for 750 volts and less, and four feet BNG for greater  
19 than 750 volts.

20 (B) A 6-inch wide warning tape will be installed one  
21 foot BNG directly over the underground power line where located  
22 on railroad right of way outside the track ballast sections.

23 (7) Fiber optic lines.

1 (A) A minimum depth of four feet BNG is required for  
2 fiber optic cable wire lines.

3 (B) Whenever feasible, all cable shall be laid within  
4 five feet from property lines.

5 (C) A six-inch wide warning tape will be installed, one  
6 foot BNG directly over the underground fiber optic line where  
7 located on state railroad right of way outside the track ballast  
8 sections.

9 (D) No rail plow will be permitted.

10

11 §21.910. Utilities Crossing Railroad Property.

12 (a) General provisions. Installations crossing railroad  
13 property, to the extent feasible and practical, are to be  
14 perpendicular to the railroad alignment and preferably at not  
15 less than 45 degrees to the centerline of the track. Utilities  
16 shall not be placed within culverts or under railroad bridges,  
17 buildings, or other important structures. Utilities will be  
18 located so as to provide a safe environment and shall conform to  
19 the current National Electrical Safety Code, American Waterworks  
20 Association Specifications, Federal Pipeline Safety Regulations,  
21 and The American Railway Engineering and Maintenance Association  
22 Specifications. If laws or orders of public authority prescribe  
23 a higher degree of protection, then the higher degree of

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1 protection prescribed shall supersede the provisions of this  
2 subchapter.

3 (b) Overhead installations.

4 (1) A minimum of four feet clearance is required above  
5 signal and communication lines.

6 (2) Poles must be located 50 feet from the centerline of  
7 the railroad main, branch, and running tracks, CTC sidings, and  
8 heavy tonnage spurs. Poles located adjacent to industry tracks  
9 must provide at least a 10 foot clearance from the centerline of  
10 the track when measured at right angles. If located adjacent to  
11 curved tracks, then the clearance must be increased at a rate of  
12 one and one-half inches per degree of curved track.

13 (3) Regardless of the voltage, unguyed poles shall be  
14 located a minimum distance from the centerline of any track,  
15 equal to the height of the pole above the ground-line plus 10  
16 feet. If guying is required, the guys shall be placed in such a  
17 manner as to keep the pole from leaning or falling in the  
18 direction of the tracks.

19 (4) Poles, including steel poles, must be located a  
20 minimum distance from the railroad signal and communication line  
21 equal to the height of the pole above the ground-line or must be  
22 guyed at right angles to the lines. High voltage towers, 34.5kV  
23 and higher, must be located off state railroad right of way.

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1           (5) Crossings shall not be installed under or within 500  
2 feet of the end of any railroad bridge, or 300 feet from the  
3 centerline of any culvert or switch area.

4           (6) Complete spanning of the property is encouraged with  
5 supportive structures and appurtenances located outside state  
6 railroad right of way. For electric supply lines, the crossing  
7 span shall not exceed 150 feet with adjacent span not exceeding  
8 one and one-half times the crossing span length. For  
9 communication lines, the crossing span shall not exceed 100 feet  
10 in heavy loading districts, 125 feet in medium loading  
11 districts, and 150 feet in light loading districts. The  
12 adjacent span shall not exceed one and one-half times the  
13 crossing span length. For heavier type construction, the  
14 district engineer may allow longer spans.

15           (7) Joint-use construction is encouraged at locations  
16 where more than one utility or type of facility is involved.  
17 However, electricity and petroleum, natural gas, or flammable  
18 materials shall not be combined. Pipe truss design and layout  
19 are subject to review and approval by the district engineer.

20           (8) To ensure that overhead wire crossings are clear from  
21 contact with any equipment passing under the wires,  
22 communication lines shall be constructed with a minimum  
23 clearance of 24 feet above the top of the rail, and electric

1 lines with a minimum clearance of 26 and one-half feet or  
2 greater above the top of the rail when required by the National  
3 Electric Safety Code or state and local regulations. Electric  
4 lines must have a fluorescent ball marker on low wire over the  
5 centerline of the track.

6 (9) The utility owner will label the posts closest to the  
7 crossing with the owner's name and telephone number for  
8 emergency contact.

9 (10) All overhead flammable and hazardous material lines  
10 require district engineer approval.

11 (11) For proposed electrical lines crossing tracks, the  
12 department may require that an inductive interference study be  
13 performed at the expense of the utility owner. Inductive  
14 interference from certain lines has the potential to disrupt the  
15 signal system in the track, causing failures in the track  
16 signals, and highway grade crossing warning devices. The  
17 district engineer may require an inductive interference study  
18 based on the proposed proximity of high voltage lines to other  
19 utility lines.

20 (c) Underground installations.

21 (1) General.

22 (A) All underground utility crossings of railroad  
23 trackage shall be designed to carry Cooper's E-80 (Railroad)

1 live loading with diesel impact (AREMA, Cooper's loading Section  
2 8-2-8). This 80,000 pound axle load may be distributed  
3 laterally a distance of three feet, plus a distance equal to the  
4 depth from structure grade line to the base of the rail, on each  
5 side of the centerline of single tracks, or the centerline of  
6 outer track where multiple tracks are to be crossed. In no case  
7 shall railroad loading design extend less than 10 feet laterally  
8 from the centerline of the track. Longitudinally, the load may  
9 be distributed between the five-foot axle spacing of the Cooper  
10 configuration. Railroad loading criteria will also apply where  
11 future tracks on state railroad right of way are contemplated,  
12 to the extent this information is available.

13 (B) All utility crossings under ditches and railroad  
14 trackage shall have a minimum depth of cover of three feet below  
15 the flow line of the ditch or ground surface and five and one-  
16 half feet from the base of the rail. In fill sections, the  
17 natural ground line at the toe of the slope will be considered  
18 as ditch grade. The depth of cover shall not be less than that  
19 meeting applicable industry standards.

20 (C) For all boring and jacking installations under main  
21 and passing tracks greater than 26 inches in diameter and at a  
22 depth of between five and one-half feet and 10 feet below top of  
23 tie, a geotechnical study must be performed to determine the

1 presence of granular material and high water table elevation, at  
2 the sole expense of the utility. The study will include  
3 recommendations and a plan for a procedure to prevent failure  
4 and a collapse of the bore. Generally, core samples are to be  
5 taken near the ends of tie at the proposed location, at least as  
6 deep as the bottom of the proposed horizontal bore. Core sample  
7 results must be reviewed and approved by the department prior to  
8 beginning boring activities. Based on core sample results, the  
9 department may require additional engineering specifications be  
10 implemented, at the sole expense of the utility, or may require  
11 the utility to select an alternate location.

12 (D) The use of plastic carrier pipe for sewer, water,  
13 natural gas, and other liquids is acceptable under specific  
14 circumstances. The use of plastic pipe is satisfactory if the  
15 pipe is designed to meet all applicable federal and state codes,  
16 and if the carrier pipe is properly encased within a steel  
17 casing pipe per AREMA standards. This casing must extend the  
18 full width of the right of way. Casing may be omitted only for  
19 gaseous products if the carrier pipe is steel and, at a minimum,  
20 is placed 10 feet below the base of the rail per AREMA  
21 standards.

22 (2) General design and construction requirements.

23 (A) If the minimum depth is not attainable because of

1 existing utilities, water table, ordinances, or similar reasons,  
2 the line shall be rerouted.

3 (B) Locations that are considered unsuitable or  
4 undesirable are to be avoided. These include deep cuts in wet  
5 or rocky terrain or where it will be difficult to obtain minimum  
6 depth.

7 (C) Underground installations may be made by open-  
8 trenching from the property line to the toe of the fill slope in  
9 fill sections, and to the toe of the shoulder slope in cut  
10 sections, but to no closer than 30 feet of the centerline of the  
11 track. The remainder will be tunneled, augured, jacked, or  
12 directional-bored through the roadbed.

13 (D) Manholes shall be located outside railroad right of  
14 way property, when possible. Manholes will not be located in  
15 the shoulder, shoulder slope, ditch, or backslope, or within 25  
16 feet of the centerline of track, and shall not protrude above  
17 the surrounding ground without the approval of the department.

18 (E) Jacking pits shall be located a minimum of 30 feet  
19 from the centerline of the track.

20 (3) Pipeline requirements.

21 (A) Pipeline designs are to specify the type and class  
22 of material, maximum working pressures, and test and design  
23 pressure. Pipelines that are not constructed, operated, and

1 maintained under regulations established under the U.S.  
2 Department of Transportation Hazardous Materials Regulations  
3 Board shall, upon revisions in the class of material or an  
4 increase in the maximum operating pressure, obtain department  
5 approval.

6 (B) Pipelines carrying oil, liquefied petroleum gas,  
7 natural or manufactured gas, or other flammable products shall  
8 conform to the requirements of the current AREMA; ANSI/ASME B  
9 31.4 Code for pressure piping - Liquid Petroleum Transportation  
10 Piping Systems; ANSI B 31.8 Code for pressure piping - Gas  
11 Transmission and Distribution Piping Systems; other applicable  
12 ANSI codes; and 49 C.F.R. Part 192 - Transportation of Natural  
13 or Other Gas by Pipeline, or Part 195 - Transportation of  
14 Hazardous Liquids by Pipeline, except that the maximum allowable  
15 stress of design of steel pipe shall not exceed the percentages  
16 of the specified minimum yield strength (multiplied by  
17 longitudinal joint factor) of the pipe as defined in the ANSI  
18 codes.

19 (C) Pipelines under railroad tracks and across state  
20 railroad right of way property shall be encased. Casings shall  
21 extend from right of way line to right of way line unless  
22 otherwise approved.

23 (D) Pipelines and casing pipes shall be suitably

1 insulated from underground conduits carrying electric wires on  
2 railroad property.

3 (E) Reinforced concrete pipe must be encased for a  
4 distance as wide as the embankment at the utility crossing in  
5 order to protect against track failure due to joint separation.

6 (4) Encasement of utilities.

7 (A) Casings may be omitted for gaseous products only  
8 under the following circumstances.

9 (i) Carrier pipe must be steel and the wall thickness  
10 must conform to Cooper E-80 loading for casing pipe shown in the  
11 tables included in the AREMA manual Chapter 1, Part 5 for  
12 Pipeline Crossings. The length of thicker-walled pipe shall  
13 extend from railroad right of way line to right of way line.  
14 This will result in thicker-walled pipe on state railroad right  
15 of way.

16 (ii) All steel pipes shall be coated and cathodically  
17 protected.

18 (iii) The depth from base of rail to top of pipe  
19 shall not be less than 10 feet below base of rail. The depth  
20 from ditches or other low points on railroad right of way shall  
21 not be less than six feet from ground line to top of pipe.

22 (B) In circumstances where it is not feasible to  
23 install encasement from right of way line to right of way line,

1 casing pipe under railroad tracks and across railroad property  
2 shall extend to the greater of the following distances, measured  
3 at right angles to the centerline of the track:

4 (i) two feet beyond toe of slope;

5 (ii) three feet beyond ditch line;

6 (iii) 25 feet from centerline of outside track when  
7 casing is sealed at both ends;

8 (iv) 45 feet from centerline of outside track when  
9 casing is open at both ends; or

10 (v) if additional track is planned for future  
11 construction, casing must extend far enough to meet above  
12 distances given the additional track requirement.

13 (C) Pipelines and casing pipe shall be suitably  
14 insulated from underground conduits carrying electric wires on  
15 railroad property.

16 (D) Casing pipe and joints shall be made of metal and  
17 of leak proof construction. Casings shall be capable of  
18 withstanding the railroad loadings and other loads superimposed  
19 upon them.

20 (E) Wall thickness designations for steel casing pipe  
21 for Cooper E-80 loading including impact are as follows:

22 Figure: §21.910(c)(4)(E)

Nominal Diameter (inches)	Min. Thickness for Coated (inches)	Non-Coated (inches)
14 and under	0.188	0.188
16	0.219	0.281
18	0.250	0.312
20 and 22	0.281	0.344
24	0.312	0.375
26	0.344	0.406
28	0.375	0.438
30	0.406	0.469
32	0.438	0.500
34 and 36	0.469	0.531
38, 40 and 42	0.500	0.563
44 and 46	0.531	0.594
48	0.563	0.625
50	0.594	0.656
52	0.625	0.688
54	0.656	0.719
56 and 58	0.688	0.750
60	0.719	0.781
62	0.750	0.813
64	0.718	0.844
66 and 68	0.813	0.875
70	0.844	0.906
72	0.875	0.938

1  
2 (i) Steel pipe shall have a minimum yield strength of  
3 35,000 pounds per square inch.

4 (ii) All metallic casing pipes are to be designed for  
5 effective corrosion control and long service life and relatively  
6 free from routine servicing and maintenance. Corrosion control  
7 measures must include cathodic protection.

8 (iii) Cast iron may be used for casing and shall  
9 conform to ANSI A21. The pipe shall be connected with  
10 mechanical-type joints. Plain-end pipe shall be connected with

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1 compression-type couplings. The strength of the cast iron pipe  
2 to sustain external loads shall be computed in accordance with  
3 the most current ANSI A21.1 Manual for the Computation of  
4 Strength and Thickness of Cast Iron Pipe.

5 (F) The inside diameter of the casing pipe shall be  
6 such that the carrier pipe can be removed without disturbing the  
7 casing. All joints or couplings, supports, insulators, or  
8 centering devices for the carrier pipe shall be considered in  
9 the selection of the casing diameter.

10 (G) For flexible casing pipe, a minimum vertical  
11 deflection clearance of the casing pipe shall be three percent  
12 of its diameter plus one-half inch so that no loads from the  
13 roadbed, track, railroad traffic, or casing pipe are transmitted  
14 to the carrier pipe. When insulators are used on the carrier  
15 pipe, the relationship of the casing size to the size of the  
16 carrier pipe is as follows:

17 Figure: §21.910(c)(4)(G)

18 Inside Diameter of Casing Pipe Equals:

Diameter of Carrier Pipe (inches)	Outside Diameter of Carrier Pipe Plus (inches)
0 - 8	2
10 - 16	3¼
Over 16	4½

19  
20 (5) Casing and pipeline installation.

1           (A) Casing and pipeline installations must be  
2 accomplished by directional boring, jack-and-bore, tunneling, or  
3 other approved methods. Tunneling construction under tracks  
4 will be permitted only under direct supervision of the  
5 department. Tunneling procedures and equipment, as well as  
6 structural design, must have department approval prior to  
7 starting any work on state railroad right of way. Generally,  
8 tunneling will not be considered where less than six feet of  
9 cover exists, or where excessively sandy, loose, or rocky soils  
10 are anticipated. Rail elevations over the work must be  
11 monitored at intervals prescribed by the department to detect  
12 any track movement. Movements of over one-quarter inch  
13 vertically shall be immediately reported to the department. The  
14 following requirements shall apply to these construction  
15 methods.

16           (i) The use of water under pressure jetting or  
17 puddling will not be permitted to facilitate boring, pushing, or  
18 jacking operations. Some boring may require water to lubricate  
19 cutter and pipe, and under such conditions, is considered dry  
20 boring.

21           (ii) Where unstable soil conditions exist, boring or  
22 tunneling operations shall be conducted in such a manner as not  
23 to be detrimental to the railroad.

1 (iii) If excessive voids or too large a bored hole is  
2 produced during casing or pipeline installations, or if it is  
3 necessary to abandon a bored or tunneled hole, prompt remedial  
4 action shall be taken by the utility.

5 (iv) All voids or abandoned holes caused by boring or  
6 jacking are to be filled by pressure grouting. The grout  
7 material shall be sand cement slurry with a minimum of two sacks  
8 of cement per cubic yard and a minimum of water to assure  
9 satisfactory placement.

10 (v) The hole diameter resulting from bored or  
11 tunneled installations shall not exceed the outside diameter of  
12 the utility pipe, cable or casing including coating, by more  
13 than one and one-half inches for pipes with an inside diameter  
14 of 12 inches or less, or two inches for pipes with an inside  
15 diameter greater than 12 inches.

16 (vi) Pits for boring, tunneling, or jacking will not  
17 be permitted within 30 feet of the centerline of the track or  
18 closer to the track than the toe of fill slopes in fill  
19 sections, or toe of shoulder slopes in ditch sections when pipes  
20 are allowed on the railroad property.

21 (B) Vents. In casing pipe installations, vents are  
22 appurtenances by which fluids or gases between carrier and  
23 casing may be inspected, sampled, exhausted, or evacuated.

1 (i) Vents shall be located at the high end of short  
2 casings and at both ends of casings longer than 150 feet.

3 (ii) Vent standpipes shall be located and constructed  
4 so as not to interfere with maintenance of the railroad or to be  
5 concealed by vegetation. Where possible, they shall be marked  
6 and located at the property line. The markers shall give the  
7 name and address of the owner, and a phone number to contact in  
8 case of an emergency.

9 (iii) Casing pipe shall be properly vented when  
10 sealed. Vent pipes shall be of sufficient diameter, but in no  
11 case less than two inches in diameter, and shall be attached  
12 near each end of the casing, projecting through the ground  
13 surface at property lines.

14 (iv) Vent pipes shall extend not less than four feet  
15 above ground surface. The top of a vent pipe shall be fitted  
16 with a properly screened down-turned elbow or a relief valve.

17 (v) For pipelines carrying flammable materials, vent  
18 pipes on casings shall be at least 16 feet vertically from  
19 aerial electric wires. Casings shall be suitably insulated from  
20 underground conduits carrying electric wires on railroad right  
21 of way.

22 (C) Shut-off valves.

23 (i) The utility shall install accessible emergency

1 shut-off valves within effective distances on each side of the  
2 railroad track. Where pipelines are provided with automatic  
3 control stations, no additional valves will be required.

4 (ii) Shut-off valves may not be placed on the right  
5 of way unless approved by the district engineer. If approval is  
6 acquired, a guardrail must protect the shut-off valve.

7 (iii) When a guardrail is required, its height shall  
8 be four feet above the ground line. All four corner posts shall  
9 be driven to a minimum depth of four feet below ground line.  
10 There shall be a minimum clearance of two feet from the valve to  
11 the guardrail. The steel pipes for the four corner posts and  
12 guardrail shall have a minimum diameter of four inches. All  
13 joints will be welded with a one-quarter inch fillet weld all  
14 around.

15 (6) Water lines.

16 (A) Where casing pipe is used, venting is not required.  
17 Sealing will be required if the ends of the casing are not above  
18 high water.

19 (B) Where non-metallic pipe is permitted and installed,  
20 steel casings are required from right of way line to right of  
21 way line.

22 (C) Manholes must be located outside the right of way,  
23 if possible. Manholes shall not be located within 25 feet of

1 railroad trackage in the shoulder, shoulder slope, ditch or  
2 backslope, and shall not protrude above the surrounding ground  
3 without the approval of the department.

4 (D) The utility shall place a readily identifiable and  
5 suitable marker at each railroad property line where it is  
6 crossed by a water line.

7 (7) Sewer lines.

8 (A) New and relocated sewer lines shall be constructed  
9 with satisfactory joints, materials, and designs that will  
10 provide protection and resistance to damage from sulfide gases  
11 and other corrosive elements to which they may be exposed.

12 (B) Where casing pipe is used, venting and sealing of  
13 casing will be required.

14 (C) Where non-metallic pipe is permitted and installed,  
15 a durable metal wire shall be concurrently installed or other  
16 means shall be provided for detection purposes.

17 (D) Manholes must be located outside the right of way,  
18 if possible. Manholes shall not be located within 25 feet of  
19 railroad trackage in the shoulder, shoulder slope, ditch or  
20 backslope, and shall not protrude above the surrounding ground  
21 without the approval of the department.

22 (8) Electric power lines.

23 (A) Lines must remain at a minimum depth of five and

1 one-half feet below the base of rail (BBR).

2 (B) Lines must remain at a minimum depth of three feet  
3 BNG for 750 volts and less, and four feet BNG for greater than  
4 750 volts.

5 (C) The wireline must be encased completely across the  
6 state railroad right of way with a rigid metallic conduit.

7 (D) Crossings must not be installed under or within 50  
8 feet of the end of any railroad bridge, centerline of any  
9 culvert, or switch area.

10 (E) Department personnel must be present during  
11 installation if railroad signals are in the vicinity of wireline  
12 crossings, unless otherwise authorized by the department.

13 (F) Markers that identify the utility shall be placed  
14 at both property lines for utilities crossing the railroad  
15 property. For parallel lines, markers shall be placed above the  
16 cable at intervals no less than 300 feet apart. The markers  
17 shall identify the owner, type of cable, and an emergency  
18 telephone number. A six-inch wide warning tape shall be  
19 installed, one foot BNG directly over the underground power line  
20 where located on state railroad right of way outside the track  
21 ballast sections.

22 (G) Above-ground utility appurtenances installed as a  
23 part of an underground installation shall be located at or near

1 the railroad property line and shall not be any closer than 25  
2 feet to the centerline of track.

3 (9) Fiber optic lines. The same requirements for  
4 electric power line crossings as outlined in paragraph (8) of  
5 this subsection will apply for fiber optic line crossings except  
6 that:

7 (A) a minimum depth of four feet BNG is required for  
8 fiber optic cable wirelines;

9 (B) the department must approve any specialized  
10 equipment used to install cable; and

11 (C) no rail plow will be allowed for installation  
12 purposes.

13  
14 §21.911. Plans and Approvals.

15 (a) Plans.

16 (1) The design of all utility installations will be the  
17 responsibility of the utility.

18 (2) The plans for the proposed installation shall be  
19 submitted to and meet the approval of the department before  
20 construction is initiated.

21 (3) Plans shall be drawn to scale showing the  
22 relationship of the proposed utility line to the railroad  
23 tracks, the angle of crossing, location of valves and vents, the

1 railroad mile post and engineering station, railroad property  
2 lines, and general layout of tracks and other railroad  
3 facilities. The plans shall include a cross-section or sections  
4 from the field survey that will show utility placement in  
5 relation to actual profile of ground and tracks. If tunneling  
6 is proposed, method of supporting tracks or driving of tunnel  
7 shall be shown. The geotechnical study, when required, shall be  
8 included.

9 (4) For carrier pipe and casing pipe, the plans shall  
10 contain the:

- 11 (A) contents to be carried;
- 12 (B) inside diameter;
- 13 (C) pipe material;
- 14 (D) specifications and grade of material;
- 15 (E) wall thickness;
- 16 (F) actual working pressure;
- 17 (G) type of joints;
- 18 (H) longitudinal joint factor;
- 19 (I) coating;
- 20 (J) method of installation;
- 21 (K) vents (number, size, height above ground);
- 22 (L) seals-both ends, one end;
- 23 (M) cover (top of tie to top of pipe or casing);

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1 (N) cover (other than under tracks);

2 (O) cover (at ditches);

3 (P) cathodic protection; and

4 (Q) type, size, and spacing of insulators or supports.

5 (5) When a geotechnical study is required, the findings  
6 and protection plan shall be prepared by a Texas licensed civil  
7 engineer and included with the plans. The geotechnical crew  
8 must be properly permitted to enter state railroad right of way  
9 and a flagger will be required when working within 25 feet of  
10 the track.

11 (6) Plans shall be submitted to the department no less  
12 than 30 days prior to the beginning of construction.

13 (b) Approvals. Approval of plans is required for all  
14 installations of utilities prior to initiation of work on state  
15 railroad right of way. The execution of the work on state  
16 railroad right of way shall be subject to the inspection and  
17 direction of the department.