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Approved by: <small>(eSign by Approver)</small>	Author: Kim Aumann
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1.0 PURPOSE AND SCOPE

This guide represents minimum design, construction and safety requirements for construction activities performed near American Transmission Company (ATC) overhead and underground transmission facilities and/or within ATC rights-of-way (ROW) by an individual or company (Applicant) not contracted by ATC.

2.0 APPLICABILITY

This guide applies to all construction activities performed by Applicant near ATC transmission facilities and/or within the ATC ROW. It provides general guidance for contractors and ATC reviewers.

3.0 INTRODUCTION

These guidelines are not intended to be all inclusive but represent minimum construction and safety guidelines that have the potential to impact ATC facilities.

4.0 DEFINITIONS

None.

5.0 EXCLUSIONS

5.1 Land Rights

ATC cannot grant property rights on land not owned by ATC. Applicant is to obtain all necessary easements from the respective property owners.

5.2 Permits/Licenses

Applicant is to secure all necessary permits or licenses from state and local authorities.

6.0 ENCROACHMENT REQUEST

6.1 Contact

All requests to use (encroach upon) ATC lands or ATC easement areas are to be submitted in writing. Written requests are required even if such use is temporary in nature. Contact the ATC Real Estate Department to obtain an *ATC Encroachment Request* form. The form is to be completed in full and any corresponding documents/plans are to be provided. A response to the request will be provided within thirty (30) business days of submittal.

American Transmission Company
ATTN: Real Estate
801 O'Keefe Road
De Pere, WI 54115
realestate@atcllc.com

Real Estate will request the appropriate person within ATC review the encroachment request or inspection. Approval or denial replies to the Applicant will be provided by the Real Estate contact.

6.2 Plans

A complete set of plans is to be submitted for review and approval for all proposed construction activities near ATC transmission facilities and/or within the ATC ROW. Plans are to include, but are not limited to, any building requests, existing and proposed grade contours, landscaping, lighting, underground facilities, construction roads or any change within the ROW.

7.0 GENERAL WORK ON TRANSMISSION ROW

7.1 Inspection

All work, including, but not limited to, construction of embankment, clearing grubbing and grading within and around transmission facilities is subject to inspection by an ATC representative. The work is to be performed in a manner satisfactory to the ATC representative and is to comply with the requirements of State and Federal codes.

7.2 Easement Access by ATC

Unobstructed ATC access to the easement area is to be maintained at all times. All equipment, materials and parked vehicles are to be arranged so that a reasonably straight thirty (30) foot wide clear area along the ROW and around structures is provided for access and maintenance activities.

7.3 Damage to Facilities

Extreme care is to be exercised in the performance of all work to prevent damage to transmission structures, foundations, adjacent structures, underground installations or property. Any damage done to the existing installations during the work is to be reported to ATC by calling toll free at 866-899-3204 and repaired at ATC's direction. The cost of repairs is the responsibility of the Applicant. The completed work is subject to final approval by ATC.

8.0 PLANNED OUTAGES

8.1 Outages

Transmission line outages may not be an option during construction operations. All requests to de-energize any ATC transmission line are to be submitted in writing prior to any work commencing on the project. Coordination of an outage may require as much as a ninety (90) day notice or longer depending on the criticality of the transmission line. ATC *Third Party Outage Agreement* will be required, and all costs associated will be collected prior to the start of the project (if applicable).

9.0 FILL AND EMBANKMENTS

9.1 Grade Changes

Increase in grade within the span may be permitted pending approval from ATC. Prior review of plans showing existing and proposed contour elevations is required to ensure that conductor clearance to ground is not compromised and all State and Federal clearances are maintained.

9.2 Construction Near Transmission Structures

All approved construction within ten (10) feet of a transmission structure should be done by hand or with small equipment equipped with direct positive controls. Work within two (2) feet of a transmission structure should be accomplished entirely with hand-operated tools. Clamshells, drag buckets or any other equipment having indirect controls or power-driven compaction equipment are not allowed to be used.

All work should be completed so that no direct or indirect pressure is brought against any portion of the transmission structure by the Applicant's equipment.

9.3 Fill Material

Fill material within thirty (30) feet of the face of a structure should be free of sod, humus, wood or other degradable materials, frozen lumps and should pass a six (6) inch ring.

9.4 Approved Compaction Method

Typically, grade increases are not allowable around wood or steel poles due to degradation concerns. Steel poles have special designs and corrosion coatings for the below grade portion and wood poles have special decay treatments applied for below grade. Should permission be granted, and conditions allow, for some grade increases, fill is to be placed in no more than six (6) inch layers and firmly tamped mechanically. All material is to be tamped uniformly prior to the next layer being placed. Continuous backfilling, while tamping is in progress, is not allowed. For tower compaction, after a layer of fill material has been put into place, compacting work is to begin near the center of the tower structure and carried out in a uniformly expanding pattern. Around tower legs, all sides are to be compacted simultaneously.

9.5 Fill Near Lattice Towers

Fill around lattice towers is typically not allowed. If fill is allowed around the base, or within the perimeter, of a lattice structure that has grillage foundations are not to exceed a depth of two (2) feet, unless examination of soil conditions by ATC proves that additional fill will not impact the structure due to increased soil stresses. Towers that have concrete foundations are not allowed to have fill placed above the top of concrete.

No fill material is allowed in an area within any tower base occupied by free water.

9.6 Protective Coating on Lattice Towers Prior to Fill

Prior to placing fill within and around lattice towers, the legs must be coated with a protective coating. After the structure has been cleaned, apply a coating of penetrating sealer and then urethane coal tar, as approved by ATC Maintenance, on all areas to be covered with fill material. This protective paint coating is to be applied to the steel work to a height of at least six (6) inches above the finished grade. The sealer and tar paint coating are to be applied during the warm weather months (per application instructions). Two (2) separate coats of the protective tar should be applied, allowing four (4) hours drying time between applications. Care is to be taken during construction to avoid damage to the protective tar paint. Approved coating is as follows:

Induron Coating Inc.
Sealer Coat: E-bond (One coat)
Protective Coat Induratar (Two coats)

Induron products can be purchased by calling their customer service center at 1-800-324-9584. MasterCard and Visa cards are accepted. If this approved product is not available, contact ATC Maintenance toll free at 866-899-3204 for additional information.

9.7 Fill Around Steel Poles

Fill is not allowed to be placed above the ground line collar (extra layer of steel plate around pole) of a steel pole structure due to corrosion issues, see Figure 1. If no collar is visible, contact ATC Maintenance toll free at 866-899-3204 for additional information.

Figure 1 – Ground Collar Ring



9.8 Fill Around Wood Structures

A maximum of one (1) foot of fill placed around wood pole structures is allowed if the existing protective coating extends above the final grade and should follow

Section 9.4 for compaction. If the final grade is to be higher than the existing protective coating, Section 9.9 is to be followed.

9.9 Protective Wrap for Wood Pole Structures Prior to Fill

Wood poles can be wrapped with a protective material prior to placing fill, no more than one (1) foot of wrap will be allowed, around the base. The wrap is to extend six (6) inches above the finished grade. Approved protective material is provided and installed by ATC. The cost is the responsibility of the Applicant. Contact ATC Maintenance toll free at 866-899-3204 for additional information.

9.10 Fill Over Underground Lines

Fill placed over ATC underground transmission facilities may reduce the operating capacity of the line. No fill is to be placed in any underground transmission ROW without a specific review and approval of the fill plan and materials by ATC.

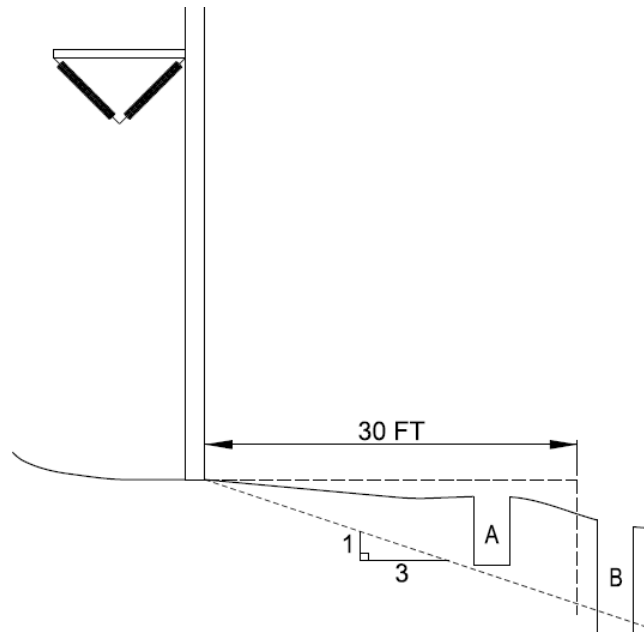
10.0 EXCAVATION

10.1 Trench Excavation Near Non-Tower Structures

When trench excavation is required in the vicinity of transmission structures, the following conditions are to be met:

- Construction trench excavations should not begin closer than thirty (30) feet from the face of a structure, see Figure 2.. Trench excavations within thirty (30) feet of a structure (trench "A" in Figure 2) are to be reviewed and approved by ATC. Slopes should not exceed a three (3) foot horizontal to one (1) foot vertical (3:1) from the existing ground line at the structure to the bottom of the excavation.
 - If ATC authorizes an excavation within thirty (30) feet of a structure the length of time that the excavation may be open may be limited and the depth may dictate a trench box or steel sheeting to hold soil in place and special backfill material and methods may be warranted as a condition of approval.
 - Temporary reinforcement of transmission line structures, including mechanical pole-holds, may be required by ATC and subject to reimbursement.

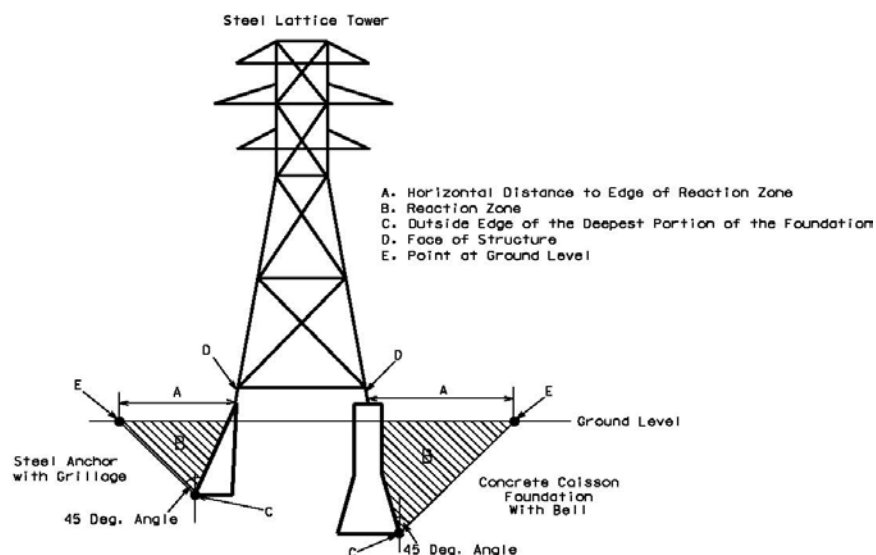
Figure 2 – Trench Excavation Near a Pole (Non-Tower) Foundation



10.2 Trench Excavation Near Tower Foundations

Excavation is not typically allowed within thirty (30) foot of a tower foundation. If excavation is within the thirty (30) feet, it must fall outside the reaction zone (B) located on all sides of a structure. This is calculated from the outside edge of the deepest portion of the foundation or pole base (C). A forty-five (45) degree angle is then calculated from the point that intersects the vertical line at the deepest part of the foundation (C) to ground level (E). The resulting horizontal distance (A) from the point at the ground level (E) to the face of the structure (D) is the reaction zone (B). See Figure 3.

With prior approval from ATC, excavation within the reaction zone (B) may be allowed if proper support of the structures is maintained using trench box, sheet piling, soil nailing, or other appropriate support methods.

Figure 3 – Trench Excavation Near a Tower Foundation

10.3 Guy Wire Anchors

Grading around guy anchors should be no closer than five (5) feet to an anchor. A maximum slope of two (2) feet horizontal to 1 foot vertical (2:1) is permissible but will only be permitted when there are no other reasonable alternatives. Fill is not allowed above the anchor “head”. If fill is required, Applicant is to arrange for ATC to extend the anchor rod the required length. The cost of modifications is the responsibility of the Applicant.

Changes in grade are not allowed between the structure and where the guy attaches at the anchor.

The cost of any guy wire or anchor relocation is the responsibility of the Applicant.

10.4 Excavated Material Storage

Excavated materials are not allowed to be stored or stockpiled directly under the conductors. Clearance requirements between transmission line conductors, stored materials and equipment used to store materials are to follow the applicable code requirements.

10.5 Excavation Near Underground Transmission Facility

10.5.1 Oversight

Planned construction activities near ATC underground transmission facilities are to be reviewed by an ATC representative.

All excavation near ATC underground transmission facilities will be monitored by an ATC representative. Contact ATC toll free at 866-899-3204 at least ten (10) business days prior to construction.

Information about excavation near underground transmission facilities is contained in ATC Guide *Construction Around ATC High Voltage Underground Cable Systems*, GDE-2500 and *Underground Transmission Line Clearances*, GDE-0265. These documents are available upon request.

10.5.2 Protection of Underground Facilities

If the grade over the underground transmission circuit or fiber optics, is permanently cut during a project causing thirty (30) inches or less cover over the underground line, galvanized steel plating is to be installed. Steel plates are to be a minimum of twelve (12) inches wide x forty-eight (48) inches long x one-quarter ($\frac{1}{4}$) inch thick. Plates are to be installed by excavating no closer than twelve (12) inches to the pipe and placing plates parallel to and centered over the underground transmission circuit. ATC Maintenance will provide steel plates. The cost of the steel plates may be the responsibility of the Applicant depending on easement rights. Contact ATC Maintenance at least twenty-one (21) business days prior to the start of construction toll free at 866-899-3204. It will be the Contractor's responsibility for unloading and installation of the plates.

When construction equipment, of substantial size and weight (such as a crane), is positioned over the underground transmission facilities, the entire area under the equipment must be reinforced using appropriate construction matting or steel road plating to equalize the weight. The Applicant is responsible for taking any and all precautions to avoid soil compaction, sinking, undermining and any other circumstances that would cause damage to the ATC underground transmission facilities.

Use of a hydraulic breaker or drop hammer is not allowed to be used when breaking out concrete over the underground transmission line. This vibration causing method of construction can cause damage to the underground transmission line. An alternate method must be used.

11.0 GRADE

11.1 Drainage Patterns

The surface elevation of the excavated area is to be restored to its original condition and not have caused any alteration of the drainage patterns in the area of the structure.

11.2 Changes in Grade

An undisturbed area of thirty (30) feet must be maintained in all directions from the nearest point of a transmission line structure.

Grade changes within thirty (30) feet of a transmission line structure may be considered when in the best interest of ATC and the grade change does not adversely affect the strength or longevity of the structure or access by construction equipment.

Grade changes in excess of one (1) foot must be reviewed and approved by an ATC representative. Transition slopes for grade changes should be no greater than five (5) feet horizontal to one (1) foot vertical (5:1). Steeper slopes can be an impediment to maintenance equipment.

11.3 Restoration

The area is to be restored to equal or better condition after completion of all authorized construction work on ATC ROW.

Restoration may include, but is not limited to, paving, seeding with ATC approved seed mix, mulching to prevent erosion and grading to maintain proper drainage and appearance.

Restoration is to be completed as soon as possible following completion of construction work.

Completed restoration work is subject to final approval by an ATC representative.

12.0 WORK ZONE

12.1 Guy Wires and Anchors

In areas where structures with guy wires and anchors protrude into the work zone, the guy wires and anchor locations are to be marked conspicuously so that construction workers and vehicles are aware of them. All markers are to be removed at project completion.

12.2 Structure Grounds

Transmission structures may have multiple ground rods. These ground wires and ground rods are not located through one call locate services. These ground rods could be located a significant distance from the structure, connected to the structure via a ground wire buried to a typical depth of eighteen (18) inches or deeper. If the ground rods are disturbed through construction activities, the location is to be noted and promptly reported to ATC toll free at 866-899-3204. The cost of any grounding relocation is the responsibility of the Applicant.

13.0 PROTECTION OF FACILITIES

13.1 Traffic Barriers

Traffic barriers to protect transmission structures may be required when roadways, driveways or parking areas are installed on ATC ROW.

Barriers are to be equivalent to ATC *Engineering Record Drawing* ER-10-000016-001 through 006 and installed on all sides of the transmission structure that is exposed to vehicular traffic. These drawings are available upon request.

A minimum of five (5) feet of clear space is to be maintained between the barrier and the base of the transmission structure.

Traffic barriers are to be pre-approved and installed by the Applicant at no cost to ATC. Installation is subject to inspection.

13.2 Construction Access Roads

All construction access roads within the ATC ROW are to be indicated on all construction drawings. All contractors are to be made aware of the access road and all construction restrictions under and near overhead transmission lines. Location of any access roads within ATC easements are to be approved prior to construction by an ATC representative.

14.0 RESTRICTED ACTIVITIES

14.1 Trees and Plantings

Removal of trees that are, or when felled could fall within the ROW or near ATC facilities outside the ROW, must follow the ANSI Z133 standard.

Plantings are not allowed over underground transmission facilities.

Any plantings within the ROW are to be referred to the ATC Vegetation Management Specialist.

14.2 Burning

Burning brush or cuttings under the wires has been known to have caused outages. Fire, heat and smoke can damage poles, wires and insulators. The smoke and airborne particles can cause electrical leakage or flashover. Heat and fire can cause wood poles to burn, oxidize the zinc coating on steel poles, towers or guys, anneal aluminum conductors and steel structures. Under law, the person causing the outage can be held liable for associated damages.

14.3 Welding

Oxy-acetylene welding under the transmission line is not recommended. All welding activities are to comply with applicable codes and regulations.

14.4 Blasting

In advance of any blasting activities, review of the *Ground Vibration near ATC Facilities*, GDE-1300 must be reviewed and followed prior to any work being completed. A blasting design or layout, procedures, qualifications and safety precautions are to be submitted and reviewed by ATC before the blasting can begin. The blasting contractor is to conform to all industry rules and regulations. Prior notice of ten (10) business days is required for an ATC representative to be on site during blasting activity.

14.5 Refueling

Refueling operations are not allowed within ATC's ROW.

14.6 Flammable and Combustible Liquids and Hazardous Substances

Above ground storage of flammable and combustible liquids is prohibited within transmission line ROW. Some common flammable and combustible liquids include, but are not limited to, alcohol, asphalt, cleaning solvents, creosote oil, fuel oil, gasoline and turpentine.

A *flammable liquid* has a flash point below one-hundred degree (100°) Fahrenheit and a vapor pressure not exceeding forty (40) psi at one-hundred degree (100°) Fahrenheit.

A *combustible liquid* has a flash point at or above one-hundred degree (100°) Fahrenheit and a vapor pressure not exceeding forty (40) psi at one-hundred degree (100°) Fahrenheit.

The Applicant may not use, store, dispose, treat or generate any hazardous substances within ATC's ROW.

15.0 SAFETY GUIDELINES

15.1 Compliance

It is the contractor's responsibility to comply with all applicable safety codes and regulations while performing work around ATC energized facilities. Applicable codes and regulations include, but are not limited to:

- American National Standard for Arboricultural Operations Safety Requirements (ANSI Z133)
- National Electric Safety Code (NESC)
- Occupational Safety & Health Administration (OSHA)
- Wisconsin Administrative Code

15.2 Energized Conductors

Workers are to assume that transmission conductors are energized at all times until verification from the ATC representative has determined the line is de-energized and grounded.

15.3 Vehicles Crossing Under Conductors

During construction activities, on land where roadways do not currently exist, vehicles under fourteen (14) feet in height may cross under the transmission line but must maintain a minimum of thirty (30) feet horizontal clearance to the structure. For vehicles or vehicles with loads that exceed fourteen (14) feet in height that may cross under the transmission line where roads do not exist, prior review and approval by ATC is required for these crossings to ensure clearances are maintained.

15.4 Grounding and Bonding

Electric and magnetic fields from transmission lines can cause induced voltage and current on insufficiently grounded equipment (such as larger vehicles) that are near the line.

For insufficiently grounded equipment, this induced voltage can be uncomfortable to people who encounter it, and cause interference to certain electrical devices. Applicant is responsible for installing any grounding or mitigation devices necessary on their equipment to minimize this issue.

For induced voltages on individuals, the most common mitigation is the use of personal protective equipment (PPE) to isolate the individual from grounded objects. This is typically accomplished by using properly insulated gloves and/or clothing.

ATC recommends that all equipment, vehicles, metallic structures and pipe be grounded when in the vicinity of energized facilities or on transmission ROW. Refer to the ATC *Right-Of-Way Grounding*, GDE-1200 for further information. A copy of this guide is available upon request.

ATC also recommends that any individuals performing aerial work in the vicinity of energized facilities or on transmission ROW be familiar with the associated hazards and how to mitigate them.

15.5 Injury Notification

If an injury occurs to any member of the public or any employee of the Applicant's agents, contractors, representatives or other persons engaging in activities on behalf of the Applicant, notification shall be made to ATC's Legal Department toll free at 866-899-3204.

This includes all work related deaths and illnesses and those work related injuries which result in loss of consciousness, restriction of work or motion, transfers to another job or require medical treatment beyond first aid. First aid treatment is defined as any one time treatment and subsequent observation of minor scratches, cuts, burns, splinters, etc. which do not ordinarily require medical care.

Notification shall be made immediately upon knowledge, in person or by telephone and promptly confirmed in writing within twenty-four (24) hours. The written notification shall include all pertinent data such as name and disposition of injured party, location of accident, description of accident, nature of injuries and names of all witnesses.

15.6 Emergency Contact

Should someone cause or potentially cause a line outage, notification to ATC is to be made immediately using the Emergency Contact Line:

Emergency Contact: 800-728-9900

16.0 APPENDICES / ATTACHMENTS

None.

17.0 REFERENCES

American National Standard for Arboricultural Operations Safety Requirements, ANSI Z133, Current Volume

National Electrical Safety Code (NESC), Current Edition, Published by Institute of Electrical and Electronics Engineers (IEEE), American National Standards Institute (ANSI) Accredited Standards Committee C2.

National Fire Protection Association (NFPA) Codes and Standards

Occupational Safety & Health Administration (OSHA)

Wisconsin Administrative Code, Chapter PSC114, Electrical Code Current Volume, Current Year

ATC Construction Around ATC High Voltage Underground Cable Systems, GDE-2500

ATC Encroachment Request Form

ATC Engineering Record Drawing ER-10-000016-001 through 006

ATC Ground Vibration Near ATC Facilities, GDE-1300

ATC Right-of-Way (ROW) Grounding, GDE-1200

ATC Third Party Outage Agreement

ATC Underground Transmission Line Clearances, GDE-0265

18.0 DOCUMENT REVIEW

This document will be reviewed in accordance with review requirements in GDE-0480, *Document Control Guide* and FRM-0481, *Document Review Checklist*. The review will ensure this document remains current and meets new or revised procedures and Standards. All reviews will be documented in the Revision Information section.

19.0 REVISION INFORMATION

Version	Author	Date	Section	Description
01	P. Ellifson	10/09/06	All	New document
02	K. Hackelberg	10/20/09	All	Changed to new format, changed all appropriate references of “must or may” to “shall”, and changed department name to AP&E, T-Line Services. Changed Section 4.1 to new address, Section 7.4.1 added reference guide, Section 7.4.2 statement for concrete removal, and Section 11.1 added vegetation management practice guides
03	K. Hackelberg	03/18/16	All	Complete review and rewrite. All Sections updated.
04	K. Aumann	03/24/20	All	Updated to new format and all sections reviewed and updated.