

MENTORING & EDUCATION GUIDE
TELECOMMUNICATIONS
TOWER TECHNICIAN

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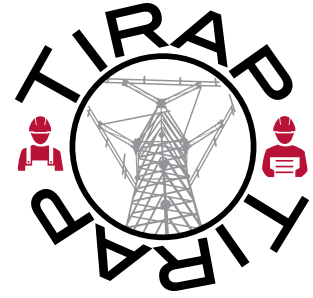
Telecommunications
Industry Registered
Apprenticeship Program



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TELECOMMUNICATIONS TOWER TECHNICIAN



The Telecommunications Tower Technician is a member of a crew performing general construction activities with an emphasis on telecommunication system installation, maintenance and inspection of existing support structures used in the provision of essential telecommunication systems, including CMRS (Commercial Mobile Radio Services), Cellular (PCS, 3G, LTE, 4G, 5G, etc.), public safety communications, utility networks and broadcast.

Telecommunications Tower Technician is the foundational role in the telecommunications infrastructure deployment and maintenance. Attaining this credential allows the individual opportunities to access the employer's Lead and Foreman occupations, and other Endorsements as defined by TIRAP.

This guide provides illustrative examples of tasks for employers and mentors to utilize as a check for competency of skills. The guide should be used as a tool by both mentor(s) and apprentice(s) to document progression of the apprentice in key skills, knowledge and competency in the defined subject matter. The guide addresses the Work Process Schedule approved by United States Department of Labor (USDOL). This process allows each organization to enhance the employer's program with additional requirements based on specific needs.

Apprenticeship training combines supervised, structured on-the-job learning and related instruction, as part of an overall strategy to develop a skilled worker. This approach has been proven to help the apprentice grow in disciplines that are critical to the employer and the apprentice's career development as they progress in competency.

Apprentices receive related instruction, or classroom style training, that complements their on the job learning. This instruction helps refine the technical and academic skills that apply to the job. Related instruction may be provided by the employer, an industry association, a community or technical college, or other similar source. This instruction can be provided online, classroom, or OJL (On the Job Learning).

The employer shall define the means of verification the mentor utilizes to ensure apprentice competency. This guide provides the employer and the mentor with examples of verification that the employer may implement as a part of their program.

Additional training may be required when the apprentice exhibits a lack of retention of skills related to the subject matter, safety issues, employer disciplinary policies or lack of proper application of the skills or knowledge areas.

ABOUT

Benefits of Competency based Apprenticeships:

With a competency based apprenticeship, the focus is on filling gaps rather than repeating what is already known:

- Through verification, acknowledges the skill set of the apprentice.
- The employer's program aligns to the needs of the individual apprentice.
- The employer's program is designed to meet their business needs.
- The apprentice is supported and encouraged to gain knowledge and skills that lead to their advancement at a pace determined by the employer and the apprentice.

Responsibilities of the Apprentice:

With signing the Apprentice Agreement, apprentices assume the following responsibilities and obligations under the apprenticeship program:

- Maintain employment status with the employer.
- Perform diligently and faithfully the work of the occupation and other pertinent duties assigned by the employer.
- Contribute to a safe working environment in such a manner to assure their personal safety and that of fellow workers.
- Attend and satisfactorily complete OJL tasks as outlined on the Work Process Schedule.
- Attend and satisfactorily complete required related technical instruction as outlined on the Work Process Schedule.
- Additional training may be required when the apprentice exhibits a lack of retention of skills related to the subject matter, safety issues, employer disciplinary policies or lack of proper application of the skills or knowledge areas.

Responsibilities of the Employer:

- Provide a safe working and learning environment. Provide supervision and training by a mentor for OJL.
- Provide well rounded training so the apprentice can learn all aspects of the occupation by the completion of the training program as listed in the Work Process Schedule.
- Monitor and document the apprentice's on-the-job progress and provide feedback on performance.
- Comply with the provisions of the Program Standards and the Apprentice Agreement.
- Support and nourish a culture that provides an environment for the development of the apprentice.

Responsibilities of Wireless Infrastructure Association as National Sponsor:

- Develop, register and monitor the program and occupations to ensure conformity to regulations, standards, and policies.
- Assist apprentices and employers with questions or concerns.
- Provide technical assistance.
- Confer with third party providers of related instruction to assure quality classroom training.

The Apprentice Registration Agreement

The Apprentice Registration Agreement is a binding document between the Apprentice, the Employer and the National Sponsor. The terms and conditions of the apprentice's training are contained in the Agreement including the start date of the apprenticeship. Please take time to review the agreement with the apprentice. It should be thoroughly understood prior to execution. If the apprentice has any questions about the Agreement, it should be discussed with the employer, and if necessary, the National Sponsor.

EQUAL EMPLOYMENT OPPORTUNITY

EEO Pledge:

The Wireless Infrastructure Association as National Sponsor will not discriminate against apprenticeship applicants or apprentices based on RACE, COLOR, RELIGION, NATIONAL ORIGIN, SEX (INCLUDING PREGNANCY AND GENDER IDENTITY), SEXUAL ORIENTATION, GENETIC INFORMATION, OR BECAUSE THEY ARE AN INDIVIDUAL WITH A DISABILITY OR A PERSON 40 YEARS OLD OR OLDER.

The Wireless Infrastructure Association as National Sponsor will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations, part 30.

Employer EEO Pledge:

[INSERT NAME OF EMPLOYER] will not discriminate against apprenticeship applicants or apprentices based on RACE, COLOR, RELIGION, NATIONAL ORIGIN, SEX (INCLUDING PREGNANCY AND GENDER IDENTITY), SEXUAL ORIENTATION, GENETIC INFORMATION, OR BECAUSE THEY ARE AN INDIVIDUAL WITH A DISABILITY OR A PERSON 40 YEARS OLD OR OLDER.

[INSERT NAME OF EMPLOYER] will take affirmative action to provide equal opportunity in apprenticeship and will operate the apprenticeship program as required under Title 29 of the Code of Federal Regulations, part 30.

YOUR RIGHT TO EQUAL OPPORTUNITY

It is against the law for a sponsor of an apprenticeship program registered for Federal purposes to discriminate against an apprenticeship applicant or apprentice based on race, color, religion, national origin, sex (including pregnancy and gender identity), sexual orientation, age (40 years or older), genetic information, or disability. The sponsor must ensure equal opportunity with regard to all terms, conditions, and privileges associated with apprenticeship.

FILING A DISCRIMINATION COMPLAINT

If you think that you have been subjected to discrimination, you may file a complaint within 300 days from the date of the alleged discrimination or failure to follow the equal opportunity standards with:

U.S. Department of Labor

Office of Apprenticeship
200 Constitution Avenue, NW
Washington, DC 20210
Attn: Jose Velazquez
202.693.2909
ApprenticeshipEEOcomplaints@dol.gov

You may also be able to file complaints directly with the EEOC, or State fair employment practices agency. If those offices have jurisdiction over the sponsor/employer, their contact information is listed below.

[Insert EEOC contact information and Contact information for state fair employment practices agency, as applicable]

[list of EEO Field Offices](http://www.eeoc.gov/field/) (www.eeoc.gov/field/)

EACH COMPLAINT FILED MUST BE MADE IN WRITING AND INCLUDE THE FOLLOWING INFORMATION:

1. Complainant's name, address, and telephone number, or other means of contact, for contacting the complainant.
2. The identity of the respondent (i.e. the name, address, and telephone number of the individual or entity that the complainant alleges is responsible for the discrimination).
3. A short description of the events that the complainant believes were discriminatory, including but not limited to when the events took place, what occurred, and why the complainant believes the actions were discriminatory (for example, because of his/her race, color, religion, sex (including pregnancy and gender identity), sexual orientation, national origin, age (40 or older), genetic information, or disability).
4. The complainant's signature or the signature of the complainant's authorized representative.



TELECOMMUNICATIONS TOWER TECHNICIAN

Quality and Safety Skills & Competencies



OSHA 10 - 10 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

RTI Description: This is a version of the OSHA 10-hour course that is provided by a trainer that has been authorized by the OSHA Training Institute (OTI) to perform instruction from OSHA. This 10-hour course is specifically targeted to the Telecommunications Indus-

try and has emphasis placed upon fall hazards and other industry specific concerns while ensuring compliance with the focus areas determined by OSHA to ensure a valid OSHA 10-hour course.

Narrative/Commentary: The employer shall choose the applicable 10 Hour Course for the State Plan State or Federal Plan State in which they provide work. Typically, this will be the OSHA 10 Construction course. The recommended best practice is to confirm the OSHA course work provided is authorized by the OTI.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Introduction to OSHA.	A prior, valid OSHA 10 card	Proof of completion	How to identify hazards.		NWSA TTT1, OSHA 10 Card	Changes to type of work performed.
Hazard identification.	A prior, valid OSHA 10 card	Proof of completion	Communication of possible hazard to competent person.		NWSA TTT1	Changes to employer or client communications hierarchy.
Roles of authorized and competent persons.	NWSA TTT1	Proof of completion	Participate in Job Hazard Assessment (JHA) for the job site and the Scope of Work (SOW).		NWSA TTT1	Changes in type of PPE issued.
Communication and escalation of hazards to proper company officials.	None		Appropriate use of PPE.		NWSA TTT1	
Understanding care, use and inspection of PPE.			Authority to stop work if hazard identified.		NWSA TTT1	
Stop work requests are warranted and escalated.						
OSHA is there for the apprentice and safety of the crew.	A prior, valid OSHA 10 card	Proof of completion				

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HAZARD ASSESSMENT AND COMMUNICATION – 30 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

RTI Description: An introduction to the various structures that work will be performed on. Based upon the Scope of Work (SOW) and the type of structure it is being applied to the hazards may change, and

this requires the ability to understand that there is a hazard and it must be communicated to the rest of the team. This training is comprised of RTI and OJL with the majority of the time dedicated to the OJL with the support of a mentor.

Narrative/Commentary: The employer is to ensure the TTT clearly understands they are authorized to take prompt, corrective measures when a hazard is identified. A critical component of this is the employer’s process for communication, escalation and abatement of recognized hazards.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Hazard identification based upon SOW.	A prior, valid OSHA 10 card, RF exposure, Competent Climber, Competent Rescuer, NWSA TTT1	Proof of completion	Identify means to assess hazards and participate in Job Hazard Assessment (JHA) for the job site and the Scope of Work (SOW).		Participation in the creation, maintenance, and updating of the JHA and reviews with Competent Person.	As basis of SOW changes
Communication of possible hazards to team.	A prior, valid OSHA 10 card, RF exposure, Competent Climber, Competent Rescuer, NWSA TTT1	Proof of completion	Inspection prior to use of proper PPE, if required.		PPE inspection forms.	Changes to standards or regulations
Participation in and assist with documented JHA.	A prior, valid OSHA 10 card, RF exposure, Competent Climber, Competent Rescuer, NWSA TTT1	Proof of completion	Eliminate or abate hazards.		Accurate assessment of possible hazards on site and means of abatement.	Mandatory refresh of climber training
Escalation of possible hazard to proper officials.	A prior, valid OSHA 10 card, RF exposure, Competent Climber, Competent Rescuer, NWSA TTT1	Proof of completion	Proficiency as Competent Climber		Employer completed Climber Assessment	
Recognition of the hierarchy of hazard controls.	A prior, valid OSHA 30 card	Proof of completion	Refer to Global Harmonized System (GHS) for handling material.		Refer to employer’s process for handling material.	
			Review and apply employer’s process for communication, escalation and abatement of recognized hazards.		Review employer’s safety plan and complete any required forms.	
			Presents JHA to Team under the supervision of the Competent Person.		Documented JHA.	

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RF ASSESSMENT AND EXPOSURE – 15 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

Description: Apprentices may be exposed to RF energy. Employers must provide documented training on the hazards associated with

working around RF, recognition of exposure symptoms and knowledge in hazardous energy control procedures.

Narrative/Commentary: PPE is not enough. It is important for there to be an understanding of the hazard associated with RF and the ability to work as part of a team to communicate the hazard and means of abatement or use of PPE for protection. Best practice is to provide training for all new hires and refresh training for existing employees annually.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Awareness of exposure effects.	Training via third party organization.	Proof of completion	Adherence to Employer's RF Safety Plan.		Participation in review of the Employer's RF Safety Plan.	Changes in Employer's RF Safety Plan.
Identify basic antenna types and radiation patterns.	Training via third party organization.	Proof of completion	Identify antenna types and RF concerns from the antennas along the climbing path and in/around the intended work zone and surrounding area.		As part of JHA/RF Assessment per site.	Change in exposure limits.
Awareness and identification of AM de-tuning equipment and working with AM de-tuning equipment.			Ensures the monitor covers the exposure frequencies and demonstrates the proper use, limitations, and inspection of an RF monitor verifying proper calibration per the manufacturer's recommendation.		Demonstrated proper use of RF Monitor per manufacturer's instructions.	Changes in employer's PPE.
Awareness of proper procedures and related requirements for work near RF emitting components.	Training via third party organization.	Proof of completion	Apprentice utilizes employer's communication protocols to Competent person with questions or concerns related to the RF Assessment and Control Plan.		Apprentice consistently applies and follows communication protocols.	
Awareness of lock out/tag out, and monitoring procedures.						
Use of the appropriate RF monitor, frequency specific, per manufacturer specifications.						
AM antenna awareness.	Training via third party organization.	Proof of completion				
Symptoms of RF exposure	Training via third party organization.	Proof of completion				

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FIRST AID/ CPR – 10 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

Narrative/Commentary: Courses offered by the Red Cross/American Heart Association for First Aid and CPR meet the requirement for related technical instruction. Employers are encouraged to consider alternative first aid training programs which exceed this foundational training.

Description: These courses follow the agendas established by Red Cross/American Heart Association.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Recognize and care for a variety of first aid, breathing, and cardiac emergencies involving adults.	Completion of prior First Aid/CPR training from Red Cross, American Heart Association or other reputable provider. Certification must be current.	Proof of completion	Verification of the location and contents of first aid equipment.		Completed inspection requirement for First Aid kits.	Expiration of certification.
Learn to assess a victim during a medical emergency.	Completion of prior First Aid/CPR training from Red Cross, American Heart Association or other reputable provider. Certification must be current.	Proof of completion	As part of JHA, determine location of nearest medical facility.		Completed JHA.	Changes in curriculum and/or processes recommended by Red Cross/American Heart Association.
Learn to perform CPR on an adult.	Completion of prior First Aid/CPR training from Red Cross, American Heart Association or other reputable provider. Certification must be current.	Proof of completion	ANSI 308 Class B based on the number of people on the job site.			
Demonstrate basic first aid skills needed to control bleeding and immobilize injuries.	Completion of prior First Aid/CPR training from Red Cross, American Heart Association or other reputable provider. Certification must be current.	Proof of completion				
Demonstrate skill needed to assess and manage airway obstruction.	Completion of prior First Aid/CPR training from Red Cross, American Heart Association or other reputable provider. Certification must be current.	Proof of completion				
Demonstrate skills to provide one and two-person CPR to adults.	Completion of prior First Aid/CPR training from Red Cross, American Heart Association or other reputable provider. Certification must be current.	Proof of completion				
Assessing injuries.	Completion of prior First Aid/CPR training from Red Cross, American Heart Association or other reputable provider. Certification must be current.	Proof of completion				

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COMPETENT CLIMBER – 15 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

Description: A pre-requisite for the Competent Climber is completion of Authorized Climber certifications or verification. A competent climber is an individual with the physical capabilities to climb, has actual tower climbing experience, is trained in fall protection regulations and standards including the equipment that applies to tower work, is capable of identifying existing and potential fall haz-

ards, and has the employer’s authority to take prompt corrective action to eliminate those hazards. A competent climber is responsible for the authorized climbers when working at height.

Narrative/Commentary: A competent climber is one who has the authority to act and correct unsafe conditions. In order for a person to accomplish this they need to understand the SOW and the structure it applies to. The individual shall have the ability to create and communicate the fall protection plan taking into account the climbing path, construction activities, fall protection equipment and PPE. Best practice when assessing prior applicable training is for the employer to conduct a verification and evaluation of skills.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Achieve Authorized Climber status	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Engages with the competent person to comply with the fall protection plan for the work site.	No	Review of the JHA including the fall protection plan with Mentor Observation	
Understanding of ANSI/TIA 222-H-Section 12-Climbing Facilities, Annex I (Climber Attachment Achorages).	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Proper use of fall restraint and fall arrest. (What’s attached to you and how you are using it.)	No	Mentor observation	Changes in ANSI/TIA 222 and related sections.
Understand the requirements of a fall protection plan compliant with ANSI/ASSE A10.48, Section 6, Fall Protection. This includes recognition of Z359.	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification, SPRAT or IRATA certification	Proof of completion	Assessing Attachment points, anchors for fall restraint or arrest anchor connectors.	No	Mentor observation	Changes in ANSI/ASSE A10.48 and related sections.
Recognition of 29CFR1926.			Inspection of harnesses and connecting devices.	No	Mentor observation	
Fall restraint, fall restriction and fall arrest.	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Proper use of harnesses and connecting devices.	No	Mentor observation	Changes in Z359.
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COMPETENT CLIMBER – 15 HOURS (CONTINUED)

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Harnesses and connector devices.	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification, SPRAT or IRATA certification	Proof of completion	Selection and proper use of fall protection equipment required based upon structure type and scope of work.	No	Mentor observation	PPE Manufacturer updates
Lifelines; vertical and horizontal.	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Inspection and use of Lifelines.	No	Mentor observation	
Inspection of wire rope safety climb prior to use as part of fall protection plan.			Assessment of Safety climb.	No	Mentor observation	
Hazard recognition and control (mitigation) for the climbing path and when working at heights.	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Ability to identify potential fall hazards, recommend mitigation options, and document on the JHA.	No	Documented JHA	
Understand the methods/ options available to take necessary corrective measures to ensure safety for the climbing path and when working at heights.			Utilize controls for climbing facilities and climbing paths.	No	Mentor observation	
Hierarchy of fall protection. Pre-planning: ·Swing fall ·Obstructions ·Suspension trauma ·Self Retracting Device (SRD)	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Utilize proper techniques while transitioning from climbing path to work area.	No	Mentor observation	
Attachment points, anchorages and anchor connectors: ·Proper lanyard ·Fall distance ·Primary and secondary connections	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Communicate to the mentor the necessary corrective measures to ensure safety on the site.	No	Adherence to employer communication protocols	
Inspection, composition and working load limits of synthetic rope.			Inspection, care and maintenance of fall protection PPE.	No	Mentor observation	
			Document tower climbing experience and progression from Authorized Climber to Competent Climber status.	No	Mentor observation and time sheet records	

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COMPETENT RESCUE – 20 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

Description: A competent rescuer is an individual designated by the employer who by training, knowledge and experience is capable of the implementation, supervision and monitoring of a rescue at height in the event of an emergency. This person shall have the employer’s authority to write the individual site rescue plan, and may be designated to manage the employer’s fall protection rescue program.

Narrative/Commentary: Due to the nature of the work and remote work locations, crews have to rely on their members or other nearby crews for rescue. Many first responders do not have the ability to perform rescue at 200+ feet in the air. Due to this a TTT must be trained in the ability to self-rescue and to perform rescue for others. This will involve the proper planning and the types of equipment that are required.

Best practices:

- When assessing prior applicable training the employer to conduct a verification and evaluation of skills.
- Media training is an important component of communication planning and training.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Achieve Authorized Climber status	Third party Authorized Climber certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion				
Understands the OSHA requirement to provide prompt rescue.	Third party Authorized Rescuer certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Rescue plan assessment and creation.		Verification by Competent Rescuer, Authorized rescue certification	Changes in employer’s rescue equipment.
Understand the requirements of a fall protection plan compliant with ANSI/ASSP A10.48 as pertains to rescue.	Third party Authorized Rescuer certification that meets or exceeds the requirement of NATE CTS, NWSA TTT1 & TTT2 certification	Proof of completion	Understand the system(s) utilized. Self, companion and third party.		Verification by Competent Rescuer	Changes in employer’s rescue program.
Follows manufacturer’s recommendation for use of the components of the Rescue System.			Proficiency in the performance and supervision of rescue equipment for structure type.		Verification by Competent Rescuer	Changes in ANSI/ASSE A10.48.
Understands roles and responsibilities associated with rescue plan communication.			Document tower rescue experience and progression from Authorized Rescuer to Competent Rescuer status.			Annual requalification of the apprentice/journey worker.
			Adherence to employer’s emergency rescue communication protocols.			

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DOT DRIVER COMPETENCY – 10 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

Description: The purpose of DOT Driver Competency is to develop and apply driving skills to road conditions and in spite of the actions of others. Application of the requirements of Federal Motor Carrier Safety Regulations (FMCSR), as well as State specific regulations that may apply to the operation and maintenance of the employer's equipment shall be considered in the development of this training course.

***Requirements of this section may be split into two categories: Employer Approved Drivers and Non Drivers.**

Narrative/Commentary: Travel from one site to another is one of the greatest risks that face workers in this industry. Course work and practical exercises will take the apprentice through the DOT rules and regulations for the industry. Specific emphasis is placed upon proper rest, vehicle inspection, trailer inspection, backing, use of a spotter, merging in and out of traffic, and what to do in the event of an emergency.

	Knowledge			Skill		Ongoing
	Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Validation	Continuing Education
Applies to Category:	Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Observe & Document:	Changes prompting refresh:
Employer Approved Driver	Driver responsibility	Current CDL or Driver's License	Proof of completion	Applies only to employers that have employer supplied vehicle and trailer equipment.	Copy of CDL or Driver's License	Changes in employer vehicles or trailers.
Both Employer Approved Driver and Non Driver	Responsibility of the passenger	None. Review employer expectation with each Apprentice.	Proof of completion	Acts in a manner to keep both driver and passengers safe. Shall act as spotter when requested.		Changes in employer incident reporting procedures.
Both Employer Approved Driver and Non Driver	DOT Inspection	Current CDL	Proof of completion	DOT inspection of vehicle and attached equipment.	DOT inspection log	
Both Employer Approved Driver and Non Driver	Equipment pairing	Current CDL for type of equipment utilized.	Proof of completion	Support requests to serve as spotter and effectively communicates with employer approved driver.	Mentor observation	
Employer Approved Driver	Vehicle backing	Current CDL for type of equipment utilized.	Proof of completion	Demonstrate the ability to safely back the employer vehicle.	Mentor observation	
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DOT DRIVER COMPETENCY – 10 HOURS (CONTINUED)

	Knowledge			Skill		Ongoing
	Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Validation	Continuing Education
Applies to Category:	Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Observe & Document:	Changes prompting refresh:
Employer Approved Driver	Trailer backing	Current CDL for type of equipment utilized.	Proof of completion	Demonstrate the ability to safely back the employer vehicle combinations.	Mentor observation	
Both Employer Approved Driver and Non Driver	Spotter	None. Review employer expectation with each Apprentice.		Apprentice engages with others to request assistance when needed.	Mentor observation	
Both Employer Approved Driver and Non Driver	Distracted driving pledge	None. Review employer expectation with each Apprentice.	Signed Distracted Driver Pledge.	Adheres to the commitment made via the distracted driving pledge.	Copy of signed pledge and Mentor observation	
Employer Approved Driver	Obstacle course	None.		Completes obstacle course defined by employer.	Mentor observation or other training exercise.	
Employer Approved Driver	Drive through town	None.		Observation of safe and effective driving behavior.	Mentor observation	
Both Employer Approved Driver and Non Driver	Vehicle load rating	Current CDL	Proof of completion	Calculate weights of loads and ensure they do not exceed the Gross Vehicle Weight Rating (GVWR)	Mentor observation	
Both Employer Approved Driver and Non Driver				General housekeeping for vehicles, tool boxes, trailers, etc.	Mentor observation	
Both Employer Approved Driver and Non Driver	Load securement	Current CDL	Proof of completion	Demonstrate proper securement of typical load transported.	Mentor observation	

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BASIC RIGGING PRINCIPLES – 10 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

Description: Rigging is a critical component of the job functions. The apprentice must be able to understand the SOW and the structure that it is going to be applied to in order to be a part of creating

the rigging plan for the site. Special consideration is to be placed on obstructions, safety considerations, rigging components, and communications.

Narrative/Commentary: This is rigger awareness training. The apprentice is under the guidance of a competent rigger. NATE authored "Rigger Awareness" training as part of a Department of Labor Susan Harwood Grant SH-3H7 Training is one source of prior applicable training.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Purpose and elements of a rigging plan.	USDOL Susan Harwood Grant SH-3H7 or third party training	Proof of completion	Communication with competent rigger through use of hand signals, radio or other employer identified methods.		Mentor observation	
Rigging standards per ANSI B30 and A10.48.	USDOL Susan Harwood Grant SH-3H7 or third party training	Proof of completion	Review, understand and implement the rigging plan under the supervision of the competent rigger.		Mentor observation	
Identify rigging components.	USDOL Susan Harwood Grant SH-3H7 or third party training	Proof of completion	Inspect rope, blocks, attachment hardware, and slings identified as part of the rigging plan. Confirm equipment is usable and correct per the plan. Identify when to remove items from service.		Mentor observation	
Working load limits.	USDOL Susan Harwood Grant SH-3H7 or third party training	Proof of completion	Aware of the safe working load limit of the rigging system how angles will impact loads on slings and associated rigging equipment.		Mentor observation	
Awareness of rigging system forces.	USDOL Susan Harwood Grant SH-3H7 or third party training	Proof of completion	Ability to tie bowline knot, figure eight knot and a clove hitch.		Mentor observation	
Rigging hitches: bowline, figure eight, clove and inline knots	NWSA TTT1 and TTT2 certification	Proof of completion	Proper use of tag or trolley system defined as part of the rigging plan and under the supervision of the competent rigger.		Mentor observation	
Aware of proper use and operation of a capstan hoist.	NWSA TTT2 or third party training	Proof of completion	Observes operator completing inspection and operation of hoist.		Mentor observation	
Awareness of typical lift systems.	USDOL Susan Harwood Grant SH-3H7 or third party training	Proof of completion	Can demonstrate employer required hand signals using the ANSI B30.5 standard for guidance.		Mentor observation	
Hand signals per ANSI B30.5.	Third party training	Proof of completion				

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EXOTHERMIC WELDING SKILLS AND COMPETENCIES – 10 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

welding is the only reliable means of bonding galvanized mild steel to copper conductors.

Narrative/Commentary: Grounding is essential for proper protection of site and tower related equipment and appurtenances. Best practice is for the employer to verify prior applicable training.

Description: Exothermic welding is a process for permanently joining grounding or lightning protection conductors. Exothermic

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Understand components of exothermic welding.	Completion of third party, OEM, previous employer training.	Proof of completion	The ability to request or review the manufacturer's requirements when presented with: - Use of different manufacturers product (determined per scope of work). - Nontraditional welds. Weld/Manufacturer not previously trained.		NWSA TTT1, Certificate(s) documenting previous training.	Change in manufacturer's equipment, components or weld types or change in client welding requirements.
Maintaining safety of the apprentice performing the weld as well as others on the job site.			Proper use of PPE associated with performance of the weld(s).		Mentor observation	Change in PPE requirements.
Demonstrated understanding of manufacturer's requirements per use of weld verification guide.			Consistently refers/ confirms Manufacturer's instructions and checklist.		Mentor observation	
Inspection of the mold, shots and equipment ·Preparation of surface and material to be welded · Shot sizing · Use of PPE · Weld inspection · Post weld surface treatment (i.e. galvanizing)			Proper inspection, cleaning and maintenance of the mold.		Mentor observation	Change in manufacturer's equipment, components or weld types and/or QA/QC reports identify negative trend; retraining may be required.
Demonstration of proper weld technique, use of proper PPE, post weld inspection process.			Effective surface preparation and post treatment of welds compliant with manufacturer's requirements.		Mentor observation	
			Selection of the proper mold and properly sized exothermic welding material (shot) for the weld to be achieved.		Mentor observation	
			Demonstration of four basic welds: - Run and tap - Vertical up to a flat - Vertical up to ground bar - Vertical up to a round		Mentor observation	

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LINE SUPPORT AND WEATHER PROOFING - 10 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

Description: The apprentice under the guidance of the mentor, shall properly install connectors on typically used line types, hoisting grips, hangers, line support and grounding all compliant with

the manufacturers/clients requirements.

Narrative/Commentary: The industry utilizes many types of transmission line(s) for various purposes. The proper support and weather proofing of these lines is critical. The apprentice shall demonstrate the proper installation after the review of manufacturers and clients requirements for the support and weather proofing of the lines. The mentor shall evaluate the connectors performance through testing. In addition, the mentor should perform random visual checks of connectors.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Installation of hoisting grips per manufacturer's or client specification.	*NWSA Antenna & Line Specialty certification	Proof of completion	Installation of hoisting grips on the line and proper attachment to the structure per the client's requirements.		Mentor Observation	Changes to line types installed, and manufacturers or client requirements.
Line support per manufacturer's and client specification (both vertical and horizontal).	*NWSA Antenna & Line Specialty certification	Proof of completion	Ability to select the proper hangers and attach them to the structure and the line to be supported per the manufacturer's or client requirements.		Mentor Observation	Changes to line types installed, and manufacturers or client requirements.
Support line connections per manufacturer's and client specification.	*NWSA Antenna & Line Specialty certification	Proof of completion	Verify the vertical and horizontal support required on utilized line types per the manufacturer's or client requirements.		Mentor Observation	Changes to line types installed, and manufacturers or client requirements.
Minimum bend radius per manufacturer's specification.	*NWSA Antenna & Line Specialty certification	Proof of completion	Support of line on each side of a connection per the manufacturer's or client requirements. Support should not impact the weather proofing.		Mentor Observation	
Ground kit installation, spacing and attachment of the lug to the ground connection per manufacturer's and client specifications.	*NWSA Antenna & Line Specialty certification	Proof of completion	Maintain the bend radius and install lines without exceeding radius. NOTE: the employer will focus on line types specified by their clients.		Mentor Observation	Client specifies different line type.
Weatherproofing per manufacturer's and client specification. Note: When butyl method is used, a courtesy wrap is required.	NWSA TTT1 (butyl method only)	Proof of completion	Installation of ground kit and ground kit lug meeting client and manufacturer's requirements.		Mentor Observation	Manufacturers and client changes
			Connectors to be installed as per the manufacturer's specifications. This includes the use of proper tools and torque techniques when required.		Mentor Observation and evaluation of connectors	New client specified weather proofing.
			Installation of the client specified weather proofing.		Mentor Observation	New client specified weather proofing.

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* When NWSA specialty is available.

INTRODUCTION TO STANDARDS – 10 HOURS

The employer shall document the base minimum hour requirement based upon its training program, utilizing both RTI & OJL. Documentation must include time/duration. Additional training may be required when the apprentice exhibits a lack of retention of skills or lack of proper application of the skills or knowledge areas.

Description: During this portion the apprentice is made aware of some of the critical standards for the industry. ANSI/TIA 222, FAA 7460, FCC OET, ANSI/ASSP A10.48, ANSI/TIA 322 documents, are

a few of the standards that are covered regarding their use. As an example, the ANSI/ASSP A10.48 working with the ANSI/TIA 322 are used during the modification of an existing structure and this is to be reviewed with the apprentice so that they have an understanding of how to use these standards as reference documents.

Narrative/Commentary: The apprentice is made aware of the foundational standards in the industry. It is NOT intended that the apprentice have a detailed knowledge of each standard.

Knowledge			Skill			Ongoing
Related Technical Instruction	Prior Applicable Training	Validation	On the Job Learning	Previous Work Experience	Validation	Continuing Education
Typical Outcomes:	Subject Matter Previous Credit:	Documentation:	Apprentice must demonstrate:	Yes/No	Observe & Document:	Changes prompting refresh:
Awareness of the ANSI/TIA 222	Employer training, course completion notification from employer qualified third party trainer.	Proof of completion	This is a design standard with sections specific to manufacturers required tolerances, climbing facilities, grounding, maintenance and condition assessment.		Illustrative Quiz	Updates to standard
Awareness of the ANSI/ASSP A10.48	Employer training, course completion notification from employer qualified third party trainer.	Proof of completion	"This is the means and methods standard. The apprentice should be able to communicate that this standard is utilized in conjunction with the ANSI/TIA 322. (Note: The A10.48 and the 322 have superseded the ANSI/TIA 1019-A)"		Illustrative Quiz	Updates to standard
Awareness of the ANSI/TIA 322	Employer training, course completion notification from employer qualified third party trainer.	Proof of completion	This standard is used by the engineers for the review of rigging plans working with ANSI/ASSP A10.48		Illustrative Quiz	Updates to standard
47 AC 7460-1L	Employer training, course completion notification from employer qualified third party trainer.	Proof of completion	This is the advisory used by the FAA to determine marking and lighting on structures. Also should be able to convey the type of lighting, height allowed from a FAA determination letter.		Illustrative Quiz	Advisory changes
Awareness of FCC OET documents	Employer training, course completion notification from employer qualified third party trainer.	Proof of completion	Able to relate information about MPE and RF assessment. Proper use of RF meters as a part of the RF mitigation plan.		Understanding of antenna types, inspection of RF meters if utilized as part of the RF mitigation plan.	OET updates, manufacturers equipment changes.

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PRIOR APPLICABLE TRAINING (PAT)

Only the employer can deem an apprentice competent.

An apprentice may be allowed credit for previous experience towards the required work process hours for both OJL and RTI. Apprentices will be given credit for prior experience with proper documentation provided at the time of employment or as part of an incumbent worker's training and employment record. Proper documentation may include an official transcript from a pre-apprenticeship program documenting hours earned, confirmation of prior registration as an apprentice with a TIRAP participating employer, and certifications.

As part of the workforce evaluation process, conducted in conjunction with the National Sponsor, previous credit for the apprentice is identified and assigned by the employer. This information is captured on the "WIA RA Sponsor Participating Employer Questionnaire" spreadsheet. Prior credit may be applied to one or both of the following:

- 1.** OJL – This is calculated by the number of months in conjunction with verification of competency. The employer may select 3, 6, 9, or 12+ month increments.
- 2.** RTI – the amount of credit to be awarded will be determined after review of the apprentice's previous work and training/education record and evaluation of the apprentice's performance and demonstrated skill and knowledge during the probationary period.

Keep in mind, TIRAP is a competency based apprenticeship. Regardless of the number of hours assigned as prior applicable credit, all apprentices must demonstrate competency with the appropriate knowledge, skills, judgment and attitudes toward accomplishing assigned tasks as a condition of completing the program.

RELATED TECHNICAL INSTRUCTION/INCLUDING BY THIRD PARTY

Only the employer can deem an apprentice competent.

A competent person is one who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, hazardous, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Competency derived as a part of the TIRAP apprenticeship program addresses the quality of work performed as well as ensuring a safe work environment.

This individual shall have the ability to perform the work in compliance with standards, OEM requirements, and client specifications. Competency in these skills are measured to verify that the apprentice has achieved the goals of the apprenticeship program. Integrating industry-recognized credentials into an apprenticeship is a proven way of assessing gained competencies and indicating when an apprentice is ready to advance.

Employers with in-house training capacity may create and deliver their related technical instruction in-house. As a TIRAP participating employer, it is also appropriate to partner with a college, university, technical school, pre-apprenticeship program, or education vendor that has the capability to provide the relevant technical instruction outlined in your Program Standards. Your program can utilize existing course offerings or components of degree and certificate programs. Many community colleges, adult education programs, and technical schools have experience designing instruction around the needs of apprenticeship programs.

Utilizing a third party requires the employer to review the course materials, methods, and testing criteria to ensure the technical instruction will convey the proper information to the apprentice. The employer shall ensure that the third parties training does not create a conflict with the applicable regulations, industry standards and the employers policies and procedures.

The employer will be able to utilize this guide to convey the requirements for the training curriculum. The employer shall have a program in place that assess the competency of the apprentices that have attended third party technical instruction to ensure that they have gained the skills required and are applying the skills consistently.

MENTOR(S) RESPONSIBILITY

Only the employer can deem an apprentice competent.

Mentors are a critical component of an employer's apprenticeship program. Depending on skills being learned an apprentice may have more than one mentor. The mentor is the individual that supports the growth and development of the apprentice as they work their way through the TIRAP program.

A mentor facilitates personal and professional growth of an apprentice by sharing knowledge learned throughout years of experience. The desire to want to share these "life experiences" is characteristic of a successful mentor. Mentoring links an experienced person (mentor) with a less experienced person (apprentice). The mentor facilitates the development of the apprentice in the subject matter assigned. This relationship fosters the apprentice's skills, career development, and professional growth.

The mentor in this role is also responsible for conveying the organization's cultural goals. The mentor should not take their responsibility lightly and should clearly understand they are the cultural guide for an apprentice(s). Investing in the success of the apprentice(s) is a fundamental role of any mentor. They will always be seeking to nurture a learning environment while at the same time ensuring that the on the job learning is occurring while work is progressing.

Mentors engage within the requirements of the employer's program as authorized by the employer, to train and to verify competency of the apprentice(s) in the required skill areas. This will also include the need to re-train when the employer's program requires such re-training. Verification of competency by a mentor is a tremendous responsibility and should be taken seriously.

Apprentices undertake their tailored training in the most efficient means for their needs and the company's requirements. This flexibility and customization allows for the training of apprentices in the areas of quality and safety ensuring that the employer's work force is educated in regards to the TIRAP program requirements and the individual employer needs. Apprentices

should recognize the investment the employer is making in their future and engage with mentor(s) assigned for the purpose of developing their skills.

To assist the mentors the following are the basic principles of how adults learn, which are directly applicable to apprenticeship training:

- Adults are voluntary learners: Most adults learn because they want to. They learn best when they have decided they need to learn for a particular reason.
- Adults learn needed information quickly: Adults need to see that the subject matter and the methods are relevant to their lives and to what they want to learn. They have a right to know why the information is important to them.
- Adults come with a good deal of life experience that needs to be acknowledged: They should be encouraged to share their experiences and knowledge.
- Adults need to be treated with respect: They resent an instructor or mentor who talks down to them or ignores their ideas and concerns.
- Adults learn more when they participate in the learning process: Adults need to be involved and actively participating in class and when on the job site.
- Adults learn best by doing: Adults need to "try-on" and practice what they are learning. They will retain more information when they use and practice their knowledge and skills in class and on the job site.
- Adults need to know where they are heading: Learners need "route maps" with clear objectives. Each new piece of information needs to build logically on the last.
- Adults learn best when new information is reinforced and repeated: Adults need to hear things more than once. They need time to master new knowledge, skills, and attitudes. They need to have this mastery reinforced at every opportunity.
- Adults learn better when information is presented in different ways: They will learn better when an instructor uses a variety of teaching techniques.

TIRAP CONTACTS & APPRENTICESHIP PROGRAM RESOURCES



Telecommunications
Industry Registered
Apprenticeship Program



www.TIRAP.org

WIA – National Sponsor

Jonathan Adelstein, Program Sponsor
adelstein@wia.org

Deb Bennett, Director of Apprenticeship
Deb.Bennett@WIA.org

David Sams, TIRAP Chairperson
DSams@sbasite.com

Apprenticeship Resources:

[United States Department of Labor/Office of Apprenticeship \(dol.gov/apprenticeship/\)](http://dol.gov/apprenticeship/)

[United States Department of Labor/Employment & Training Administration \(doleta.gov\)](http://doleta.gov)

[Workforce GPS \(workforcegps.org\)](http://workforcegps.org)

[United States Department of Labor/Occupational Safety & Health Administration \(osha.gov/dte/\)](http://osha.gov/dte/)

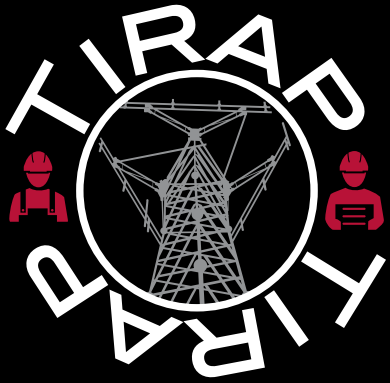
[Registered Apprenticeship College Consortium \(doleta.gov/oa/racc.cfm\)](http://doleta.gov/oa/racc.cfm)

Pre-Apprenticeship Program Providers

[Warriors4Wireless \(warriors4wireless.org\)](http://warriors4wireless.org)

[Airstreams Renewables, Inc. \(air-streams.com\)](http://air-streams.com)

[Urban League of Central Carolinas \(urbanleaguecc.org\)](http://urbanleaguecc.org)



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