



PLANNING ADVISORY NOTICE: Telecommunications Infrastructure Quality

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PAN Advisory Group: TIF Board of Directors

This Planning Advisory Notice (PAN) emphasizes the importance of quality of work during construction, maintenance, and/or restoration of telecommunications infrastructure and its direct relationship with safety and productivity. Quality, safety, and productivity are not isolated concepts that interfere with each other – they are interdependent and simultaneously impacted by one another. Due to this highly symbiotic relationship, it is imperative that stakeholders involved in the construction, maintenance, and/or restoration of telecommunications infrastructure acknowledge, appreciate, and appropriately support this relationship.

Poor-quality work creates additional burdens for stakeholders; burdens may include a need for re-mobilization to site, rework of the scope of work (SOW), erected or modified structures with capacity that is less than design intent, installed lighting or safety equipment which violates regulations or functionality, and installations that do not perform as intended.

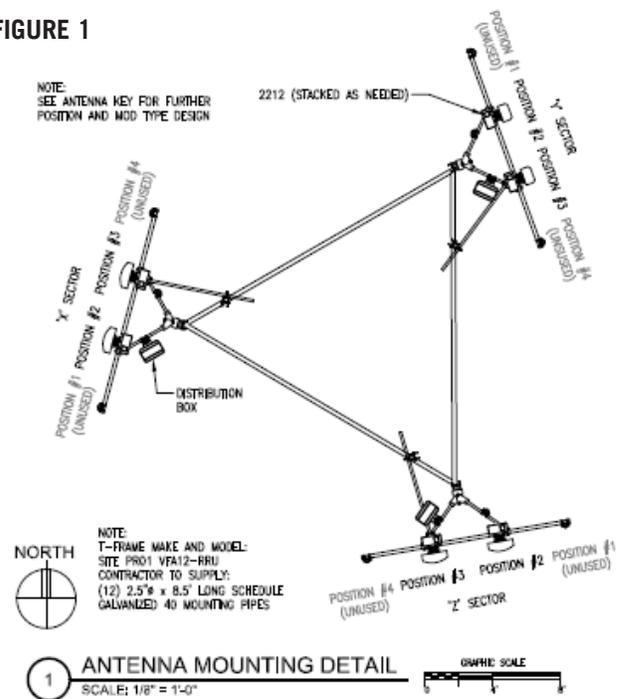
Time and money are both finite resources and these burdens created by poor-quality work lead to a drain in productivity and degrade the safety environment. Common instigators of poor-quality work are communication deficiencies, inadequate education/training, and workplace dissatisfaction.

Communication deficiencies amongst the stakeholders directly contributes to poor-quality construction, maintenance, and restorations of telecommunications infrastructure. Often times, contractors receive significant castigation when poor-quality work is observed, however, when breaking down the actual root cause, communication deficiency is often the culprit. For instance, a contractor may be provided with limited information, incomplete drawings, or even vague descriptions of what the actual SOW is. When this occurs, a contractor may make assumptions or take responsibility upon itself to guess how any particular item is to be assembled, installed, or modified. In this scenario, two primary communication deficiencies occur that cause poor-quality work. First, the stakeholder requesting the contractor to perform services should communicate a complete SOW with appropriate

drawings and/or specifications to the contractor. Secondly, when a contractor is unsure how to properly execute a SOW, the contractor should communicate questions or requests for information to the appropriate stakeholder. It should be noted that the customer may engage an engineering firm or a manufacturer for the design of a structure; in these situations, the contractor should seek the support of these individuals as facilitated by the end user or customer.

Properly communicating manufacturers drawings for assembly along with detailed accurate construction drawings can be one of the principal keys to the performance of quality work. However, lack of front-end documentation is only one example of a communication deficiency. The below Figure 1 is an example of improper communication to the contractor. Here, mount struts (tiebacks) are to be installed back into the tower bracing; however, no details were supplied concerning what that connection should look like (not to mention that one cannot simply put additional loading into the tower bracing at that location).

FIGURE 1



In the above scenario, if the contractor were to install these mounts per the drawings, damage to the structure would likely result. Additionally, the contractor would be put into a difficult position, as they must be capable of both identifying the critical flaw within the drawings and have a critical conversation with the firm who created the drawing to explain the deficiencies. It is imperative that the other stakeholders uplift and empower the contractor to communicate all critical issues they encounter.

(CONTINUED ON NEXT PAGE)

Feature Story (CONTINUED FROM PAGE 2)

Communicating accurate information between all parties from the onset is a natural precursor to high-quality work. Ultimately, stopping to raise concerns with the necessary stakeholders is exactly what should be happen. Part of the communication process is to understand what stakeholders should be engaged, having open conversations, and setting front-end expectations. In the example on page 13, the contractor was able to communicate with the engineer and the end user to arrive at a resolution that allowed for a quality install without damage to the tower diagonals.

One of the items observed in Figure 1 is the installation location of the side strut and the need for planning and communication. Likewise in Photos 1-3 below, there was inadequate planning and communication for the strut installations. As a result, the contractor elected to fill in the gaps in the SOW and these pictures show that the means selected did not meet the design intent for supporting the strut and caused damage to the structure. In this scenario, an initial communication gap (missing construction information) created a situation that led to poor-quality work. In these instances, the contractor should have communicated the issue to the appropriate stakeholder in order to develop a proper solution.

PHOTO 1



PHOTO 2



PHOTO 3



For an outline on key roles and responsibilities of stakeholders and recommended communication, it may be worthwhile to refer to the Telecommunications Industry Foundation White Paper **'Appurtenance Installation Impact to Climbing Facilities and Antenna Supporting Structures'**. Communication is the key to having high quality work, which leads to better productivity. This is due to fewer remobilizations, rework of the SOW, regulatory violations, and installations that do not work as intended. When quality is high for a contractor, it can be assumed that standards for the business are generally high, including safety equipment, safety software, and safety processes.

A final example of how a failure in communication can lead to poor-quality work is depicted in Photo 4 and Photo 5. In these pictures, the equipment was installed in such a manner which would either cause damage to the structure or render the climbing facilities unusable or hazardous for a climber to navigate through. Contractors observing these issues should engage the appropriate stakeholders to ensure the SOW does not cause damage to the structure and/or eliminating the climbing facilities.

PHOTO 4



PHOTO 5



Another indicator of poor-quality work is a lack of training and education. Training and education play an important role in employee commitment, work quality, and workplace satisfaction. Successful training programs consist of (i) management providing employees with accurate information, (ii) communication about the training, and (iii) ensuring that training is relevant to the employee's job function. Training programs should also outline the methods for an employee to escalate and communicate concerns with quality and/or safety. Training in our industry tends to focus on safety alone; the authors of this PAN believe an emphasis needs to also be placed on quality workmanship. Stakeholders will reap the rewards of providing training consistent with these guidelines because well trained workers increase productivity and profits, which also leads to higher workplace satisfaction.

Proper communication and training contribute to generating high-quality work which promotes a safe and productive work site. When work practices lack these quality expectations, incidents can occur which slows down productivity and increase costs. Conversely, when workers are encouraged to approach the SOW with a quality mindset, they inherently apply safety programs supportive of a proficient work site, increasing productivity and driving down costs. A quality work environment does not

happen overnight, it requires planning, communication, and employee support through training and education. Companies who foster an environment that emphasize planning, communication, and education tend to have increased employee retention and a better referral network than those that do not as employees prefer to work for an organization that prioritizes a safe and quality-minded work environment. It is hard to envision a work environment where increased quality does not also improve the safety and productivity of the work environment. If the work is of poor-quality, chances are that there is a lack of planning, support, and communication. To ensure that telecommunications infrastructure is built in a way that all stakeholders can be proud of, we must make it a priority to create a working environment supportive of communication.

As discussed in this PAN, the pillars of quality, productivity, and safety rely upon each other to support the success of each stakeholder. When one pillar falls, the others are inevitably strained as well. Stakeholders should make it best practice to regularly evaluate how their quality, safety, and productivity impact one another and explore where their business can be strengthened. Evidence of success with this best practice is evidenced by the 1019A Standard. This standard's main intent was to require advance planning for rigging plans (now governed by the ANSI/ASSP A10.48 and the ANSI/TIA 322) in order to create a safer work environment. However, something additional was observed; when the standard was followed the advance planning was positively impacting the quality and productivity on sites as well. There were fewer return visits and crews were able to get to work and stay at work because the SOW had been planned and effectively communicated.

In conclusion, setting front-end expectations amongst all stakeholders involved with a project can greatly assist in the quality of a project. Communication deficiencies amongst the stakeholders directly contributes to poor-quality construction, maintenance, and restorations of telecommunications infrastructure. We should all seek to foster an open environment for communication when issues arise and invest in their workforce through impactful education and training. When these principles are followed, companies will see an increase in quality work and high-quality work leads to increased production and safety. ●