STRUCTURAL REINFORCEMENT

TIA-1019-A
IT’S USE AND ROLE
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What is TIA-1019-A?
- Not just a gin pole standard
- Defines the construction loads, communication tools and construction considerations
- Evolving

ASSE 10.48-2015 (Means and Methods)
American National Standard Construction and Demolition Operations

Criteria for Safety Practices with the Construction, Demolition, Modification and Maintenance of Communication Structures

TIA-322 (Design)
Loading Criteria, Analysis, and Design Related to the Installation, Alteration and Maintenance of Communication Structures
Exercise:
- A Reanalysis is completed
- Modification of the structure

The problem
- 288’ Self Supporting Tower
- Replace members
  - Diagonals from 0’ to 80’
  - Horizontals from 0’ to 80’
- Improper Bid
- Educate client
TIA-1019-A REQUIREMENTS FOR THIS PROJECT:

- CREATE A RIGGING PLAN TO PERFORM THE MODIFICATION
- MAINTAIN A SAFE WORKING ENVIRONMENT
- MAINTAIN THE STRUCTURAL INTEGRITY OF THE TOWER
- THE CONTRACTOR CREATES THE RIGGING PLAN TO PERFORM THE MODIFICATION.
- Determine the class
- Engineer knows what Contractor knows how

- THE ORIGINAL ENGINEER MAY NOT BE ABLE OR WILLING TO DO THE TIA-1019 REVIEW. WHY?
  - DOES NOT WANT TO DO THIS TYPE OF WORK
    - INSURANCE RESTRICTION
  - DOES NOT HAVE THE KNOWLEDGE OR EXPERIENCE TO BE THE QUALIFIED ENGINEER
    - NEED TO UNDERSTAND FABRICATION AND INSTALLATION TOLERANCES.
    - MUST HAVE COMMUNICATION SKILLS
    - MUST UNDERSTAND THE STANDARDS
QUALIFIED ENGINEER

- PROVIDES A COST ESTIMATE TO THE CONTRACTOR TO REVIEW THE RIGGING PLAN
- DOES NOT CREATE THE RIGGING PLAN
- WORKS TO SUPPORT AND FACILITATE THE CONTRACTORS DISCUSSION WITH THE CLIENT IF NECESSARY.
THE PROCESS

1. THE RIGGING PLAN IS CREATED
   • Contractor communicates the how
   • Sets expectations i.e. re-use, time, adaptability
   • This is something that has long occurred in the industry now we have a standard to rule it

2. QUALIFIED ENGINEER REVIEWS THE STRUCTURES \textit{STATIC} STATES THAT ARE REPRESENTED IN THE RIGGING PLAN.
   • A REANALYSIS IS A STATIC REVIEW OF THE STRUCTURE.
   • NO DIFFERENCE JUST A DIFFERENT SET OF CONDITIONS.
   • THINK OF EACH STAGE OF THE RIGGING PLAN AS A PICTURE OF THE STRUCTURE

PRIMARY QUESTION
WHAT HAPPENS TO THE STRUCTURE IF THE PLAN IS USED?
WHAT WAS THE QUALIFIED ENGINEERS RESPONSE TO FIRST SUBMITTAL

- LEGS ARE NOT PROPERLY SUPPORTED
  - RESULTS IN VERY LARGE OVERSTRESS EVEN WITH SHORT DURATION WIND LOAD.

- DISCUSSION ABOUT POSSIBLE SOLUTIONS
  - THE ENGINEER IS PROVIDING INFORMATION ON STRUCTURAL REQUIREMENTS
  - EXAMPLE: THE LEGS REQUIRE BRACING DURING REPLACEMENT OF MEMBERS

- A REVISED RIGGING PLAN IS REQUIRED -
EXISTING SECTION

REVISED RIGGING PLAN
EXISTING SECTION WITHOUT BRACING

THE RIGGING PLAN MUST ENSURE THIS ARRANGEMENT DOES NOT HAPPEN

REVISED RIGGING PLAN
EXISTING SECTION WITH REINFORCEMENT

REVISED RIGGING PLAN
REVISED RIGGING PLAN

BRACING REMOVED AND REINFORCED

EACH OF THESE SLIDES REPRESENTS A STATIC CONDITION

READY FOR INSTALLATION OF NEW BRACING
SAUCE
Stop
Assess
Understand
Communicate
Execute
REVISED RIGGING PLAN

BRACING REMOVED AND REINFORCED

READY FOR INSTALLATION OF NEW BRACING

EACH OF THESE SLIDES REPRESENTS A STATIC CONDITION
• CONTRACTOR OWNS THE MEANS AND METHODS

• SHOULD PROVIDE FEEDBACK TO THE ENGINEER ABOUT THE OPERATION OF THE RIGGING PLAN
IT IS IMPORTANT TO MONITOR THE STRUCTURE DURING THE IMPLEMENTATION OF THE RIGGING PLAN.

WHAT IS THE WIND DURATION PRESCRIBED?
WHAT IS THE FORECAST?

COMPLIANCE WITH THE SPECIFIED TIME DURATION

A DISCUSSION WITH THE ENGINEER CAN PROVIDE INFORMATION TO THE CONTRACTOR ABOUT THE AREAS OF THE STRUCTURE THAT ARE CRITICAL. WHERE IS THE STRUCTURE VULNERABLE?

THIS DISCUSSION DOES NOT IMPLY THE ENGINEER IS PARTICIPATING IN THE CREATION OF THE RIGGING PLAN OR BECOMING RESPONSIBLE FOR THE MEANS AND METHODS.
OWNER RESPONSIBILITIES

DOES THE CONTRACTOR HAVE A RIGGING PLAN?

IS THE RIGGING PLAN COMPLIANT WITH TIA-1019-A OR CURRENT REVISIONS (A10.48 AND TIA-322)

RECOGNIZE THIS PROCESS AS ESSENTIAL
• MOST OWNERS REQUIRE COMPLIANCE WITH THE STANDARDS IN THEIR CONTRACTS
• OWNERS SEEK TO HAVE QUALITY WORK AND THIS STANDARD ALLOWS FOR WORK TO OCCUR IN A SAFE AND EFFICIENT MANNER
• MANY OWNERS FOLLOWING THIS STANDARD HAVE FOUND THAT THE WORK IS COMPLETED PROPERLY THE FIRST TIME

ISSUE RESOLUTION
• OSHA IS VERY AWARE OF THE PROPER USE OF THIS STANDARD AND IT HAS BEEN USED IN CITATIONS WHEN NOT PROPERLY FOLLOWED
• PRIOR TO THIS STANDARD THERE WAS NO BRIDGE BETWEEN THE ENGINEER AND THE CONTRACTOR.
FUTURE DEVELOPMENTS

• INFORMATION ABOUT TIA-1019-A
  ◦ SEE THE PAN’S
  ◦ WHITE PAPERS

• TIA-1019-A WILL BE REPLACED
  ◦ A10.48 – MEANS AND METHODS
  ◦ TIA-322 – CONSTRUCTION DESIGN

• MOUNT SPECIFICATION
  ◦ TIA-222-H – ADDING MOUNT ANNEX
800% OVERSTRESS MEN WORKING IN A SAFE MANNER TO COMPLETE THE FIRST TIME
QUESTIONS