Common Problems and Countermeasures in Broadcasting Network Engineering Construction and Acceptance: Post-Print

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Date: 2023-10-08T00:00:00+00:00

Abstract

Currently, the construction and development of broadcasting network engineering in China are advancing rapidly, catalyzed by continuous improvements in construction technology and management levels. However, practical construction and acceptance operations continue to face numerous challenges arising from various factors. This paper presents a detailed analysis of the current status and existing problems in broadcasting network engineering construction and acceptance, and subsequently proposes optimization measures grounded in practical realities. It is hoped that this research will contribute to the resolution of these practical issues.

Full Text

Problems and Countermeasures in Radio and Television Network Engineering Construction and Acceptance

Abstract: Currently, the construction and development of radio and television network engineering in China are progressing rapidly, with continuous improvements in construction technology and management levels promoting the advancement of these projects. However, in specific construction and acceptance work, various problems remain to be solved due to the influence of certain factors. This paper provides a detailed analysis of the current status and existing problems in radio and television network engineering construction and acceptance, and proposes optimization measures based on actual conditions. It is hoped that this research will contribute to solving practical problems.

Keywords: Radio and television network; Construction; Acceptance

Classification Code: TP399
Document Code: A

Article ID: 1671-0134(2017)10-115-02
DOI: 10.19483/j.cnki.11-4653/n.2017.10.048
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1. Current Status of Radio and Television Network Engineering Construction and Acceptance

The current status of radio and television network engineering construction and acceptance reveals significant coordination challenges due to project complexity. Pipelines and pole-route cables constitute the fundamental transmission infrastructure, yet these resources are severely lacking during construction. In trunk line and distribution network construction, cables must be installed on infrastructure owned by other property rights holders, which increases construction difficulty and makes free resource utilization impossible, resulting in substantial capital consumption [**?**]. Furthermore, asynchronization between construction and municipal development is prominent. Urbanization involves numerous departments and units, while radio and television network projects can only proceed according to fixed construction schedules. Any changes in municipal projects due to various factors inevitably affect the continuation of network engineering work.

During construction, significant discrepancies exist in coordination consistency between construction units. The limited number of construction teams, combined with personnel who struggle to fully master the technical specifications of radio and television network construction, leads to work that cannot strictly adhere to technical standards. This creates substantial gaps between actual construction techniques, technical parameters, and requirements, severely impacting overall project quality [**?**]. Additionally, uncertainties regarding required equipment in network engineering projects, coupled with different procurement and application methods, inevitably result in varying logistics service efficiency. Some logistics cycles are excessively long, causing project delays and affecting overall construction efficiency.

2. Problems in Radio and Television Network Engineering Construction and Acceptance

Construction and acceptance work in radio and television network engineering faces numerous problems across several dimensions that directly impact project quality.

First, construction technology issues represent a fundamental concern. The construction phase involves multiple components, where quality control of each element forms the basis for overall project quality assurance. However, discrepancies exist between as-built drawings and actual construction, preventing accurate reflection of actual 工程量 and cable routing. This inevitably affects sub-

sequent network maintenance and creates significant complications for project settlement [**?**]. Additionally, cables and optical fibers lack proper identification during construction, or contain identification errors, which hinders efficient network maintenance and emergency repair operations.

Second, cable construction quality issues directly affect normal network operation and future maintenance efficiency. Current cable construction practices reveal mismatches between reserved cable positions/quantities and actual requirements. Some projects reserve hundreds of meters of cable on machine room roofs or inside optical cable boxes, yet fail to reserve cables for road crossings and pending construction areas. Moreover, height design for road-crossing cables fails to meet practical application requirements, and protection measures for cable risers and drops are inadequate, posing significant threats to safe cable utilization [**?**]. Cable joints are often fabricated without specialized tools, making them prone to disconnection. Discrepancies also exist between reported and actual quantities of optical and electrical cables in inspection applications, compromising overall project quality. The practice of using pigtails as tail cables degrades performance and increases maintenance burdens.

Third, construction safety issues are prominent throughout radio and television network engineering projects, with inadequate safety management. Some cables, optical receivers, and branch distributors are installed in close proximity to power lines without proper safety precautions, with some cables even bound together with electrical wires. Such situations could cause severe losses if safety incidents occur. Additionally, some construction personnel exhibit weak safety awareness and fail to emphasize compliance with safety management systems and operational specifications, posing significant threats to project quality assurance.

Beyond construction problems, numerous issues also exist in the completion acceptance phase that continue to affect project quality.

The first acceptance problem concerns inaccurate acceptance data. The fundamental requirement for completion data in radio and television network acceptance is reliability, yet actual acceptance processes require repeated modifications, with few projects passing initial review. The primary cause is inaccurate relevant data—project changes are not promptly updated, causing discrepancies between material data and actual conditions [**?**]. Inefficient data transmission processes further reduce data accuracy and overall work efficiency.

The second problem involves low efficiency in completion data compilation. The compilation efficiency of completion data significantly impacts inspection effectiveness. In practice, some units only fill out completion templates after project completion, rather than documenting progress in real-time, resulting in low compilation efficiency and compromised data authenticity. Untimely reflection of project changes in documentation creates substantial obstacles to final acceptance. Construction units' insufficient emphasis on completion data compilation leads to numerous quality issues, and tight reporting deadlines make

on-site acceptance impossible.

The third problem is unscientific acceptance workflow. Radio and television network engineering acceptance fails to follow scientific procedures. When problems arise in one 环节, time constraints prevent effective and timely resolution, affecting overall project completion and commissioning schedules.

3. Optimization Measures for Radio and Television Network Engineering Construction and Acceptance

To ensure quality in radio and television network engineering construction and acceptance, each 环节 must strengthen quality control through scientific methods. The author proposes the following optimization measures:

First, ensure standardized design and construction practices. Radio and television network engineering involves complex work content and challenging construction environments, necessitating design processes that emphasize close connection with field conditions and thorough site investigations to guarantee design quality. Clear engineering design principles must be established, including explicit determination of subscriber quantities from optical fiber to communities, specific routing, and installation methods to scientifically ensure signal quality. Designs should position optical nodes rationally, install signal amplifiers, improve network reliability, and reserve return channels.

Second, strengthen the completeness and accuracy of acceptance data. Acceptance work must establish comprehensive completion data management systems with explicit detailed requirements to enhance data management. The importance of completion data management should be promoted through multiple channels to ensure all personnel recognize its significance. Before construction begins, supervision, construction, and design units should review contractors' completion data compilation measures to ensure standardized documentation while implementing inspection and supervision to guarantee scientific data compilation. These measures help improve acceptance efficiency.

Third, emphasize in-depth study of relevant policies and regulations. Radio and television network engineering construction and acceptance must comply with applicable laws and regulations. Industry practitioners should carefully study the Radio and Television Management Regulations and Facility Protection Provisions, comprehend their legal spirit, and effectively communicate the social attributes and public welfare nature of radio and television networks to local party committees, governments, and society to secure greater support for project construction. Construction should strengthen cable line patrol and inspection, coordinate timely with relevant departments, and develop appropriate contingency plans to facilitate smooth project implementation.

Fourth, operate according to acceptance standards. Acceptance work must follow specifications for cable television network engineering construction and acceptance, ensuring construction meets design standards, guaranteeing normal

acceptance completion, and promoting smooth project commissioning. Safety measures must be implemented during process system testing and acceptance, while completion archives must be comprehensively, completely, and authentically presented. Overall project quality acceptance must be properly implemented, including systematic testing of optical cable transmission and distribution networks to ensure quality in all aspects.

Fifth, emphasize comprehensive quality improvement for relevant personnel. Radio and television network engineering construction and acceptance require professional support. Both construction and acceptance personnel must prioritize professional development, master relevant technologies proficiently, maintain proper work attitudes, and improve data accuracy and authenticity. Only through these measures can construction and acceptance work proceed smoothly.

4. Conclusion

In summary, radio and television network engineering construction and acceptance constitute systematic work requiring strengthened quality control at each node. Particularly during the current reform and development phase, with comprehensive reforms being vigorously implemented, ensuring construction quality is essential for successful project commissioning. Only by solidifying these foundational aspects can radio and television network engineering quality be guaranteed. Through theoretical analysis of current construction and acceptance problems and the proposed measures, this paper hopes to contribute to solving practical issues and ensuring smooth project implementation.

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Note: Figure translations are in progress. See original paper for figures.