



**BDC GROUP INC.**  
BUILDING DIVERSE COMMUNICATIONS

# + THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION

FIBER-TO-THE-HOME NETWORK EXPANSION PROJECT



# WHAT IS TELECOM CONSTRUCTION?

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

Telecom construction (*or telecommunication construction*) is the style or method of applying engineering, design, planning, project management, building, transportation, logistics, electrical and completion of a specific infrastructure project.

The following guide will explore:

## **1. Introduction**

Exploring a specific telecom construction project.

## **2. Engineer Design and Planning**

Full planning process for the pre-construction phase.

## **3. Project Management**

How the project manager sets and meets goals.

## **4. Site Preparation**

Preparing a telecom site before delivery of products.

## **5. Building Foundation**

Mapping out the area for concrete installation.

## **6. Transportation and Logistics**

Evaluating site conditions and planning for heavy-haul offload process.

## **7. Electrical and Grounding**

Installation of important electrical and grounding materials.

## **8. Completion of Project**

Watch a video exploring this Fiber-to-the-Home network expansion.

# INTRODUCTION

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

While telecom infrastructure may vary based on scope of work, the need for turn-key construction services is key to the success or failure of any project.

Our team recently completed work partnering with ImOn, a local ISP (*Internet Service Provider*), to help with network expansion in the Cedar Rapids/Marion area.

This project called for specific products and turn-key services including:

- Precast Concrete Shelter (11'x20')
- Generator (12 KW)
- Concrete Removal and Installation
- Transportation and Logistics
- Grounding
- Electrical Service



# ENGINEERING DESIGN AND PLANNING

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

Before any construction can get underway, a strong knowledge of engineering design and planning is required to fully understand the project requirements.

Engineering Design is defined as the process of devising a system, component or process to meet desired needs. It's a decision-making process, in which the basic science and mathematics and engineering sciences are applied to convert resources optimally to meet a stated objective.

In this example, a full analysis of the proposed site location was performed to determine how much physical space was needed to perform all aspects of the proposed turn-key services. The full planning process determined a number of factors had to be dealt with before beginning the pre-construction phase. This included the removal of existing concrete and landscape.





# PROJECT MANAGEMENT

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

Once the pre-construction and planning phase concludes, a lead Project Manager begins to map out the scope of work for the entire project from the smallest detail to the biggest obstacles.

Project Management is the practice of initiating, planning, executing, controlling and closing the work of a team to achieve specific goals and meet specific success criteria at the specified time. The primary challenge is to achieve all of the project goals within the given constraints.

With this project example, a procurement process was conducted to determine the exact type of telecom shelter and generator that would be required to house all of the equipment inside. In addition, details on transportation/logistics for delivery of the concrete shelter and grounding/electrical service were also carefully planned out to meet industry standards and reduce lead times.

# SITE PREPARATION

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

With the scope of work determined, the next important phase involves the actual preparation of the telecom site before anything can be delivered and fully built out to specification.

Site Preparation is the act of grading, landscaping and building roads and siding of an area of ground where anything previously located has been cleared to make the project site free of obstruction.

For this project, we utilized excavating equipment to fully prepare the landscape. This included physically removing a tree and pre-existing concrete foundations. By doing this, we were preparing the site for new concrete foundation and other needed site work.





# BUILDING FOUNDATION

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

Once the site landscaping is fully prepared, getting the area mapped out for the foundation is the next critical phase before items can be delivered.

In this example, our team first focused on the build out of the concrete foundation that would house the placement of the 11'x20' precast concrete shelter.

Full breakdown of the foundation process included:

- Location of four conduits coming up into the concrete shelter.
- Tape was placed before concrete was poured.
- Rock placed in foundation bed to provide a firm surface for concrete.
- Rebar was placed in framed area to add extra strength for poured concrete.
- Concrete pads created for concrete shelter, entrance and generator.



# TRANSPORTATION AND LOGISTICS

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

With the Project Manager having a scope of work intact, site preparation complete and foundation in place, the next important step is preparing for transportation and logistics.

Logistics is the planning, execution and control of the procurement, movement and stationing of personnel, material and other resources to achieve the objectives of a campaign, plan or strategy. When it comes to telecom, this could be planning for transporting very heavy pieces of equipment such as telecom concrete shelters, generators, cabinets or fiber optic cable.

In this example, our project management team evaluated all site conditions to make sure they were conducive for the weight of the crane and truck with a heavy concrete shelter on it. Once the foundation had proper time to cure, a date was picked to deliver the shelter to the site.



# TRANSPORTATION AND LOGISTICS

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

The schedule required lots of planning in advance, including lining up the arrival of the crane at the offload site and scheduling an appropriate time for pick up where the shelter was being held. With proper planning, the job was able to remain on schedule and stay on budget.

Our offload process for this project included:

- Ready the shelter to be lifted by removing any loose equipment.
- Lifting plates were attached at the base of the shelter.
- Crane size was determined based on the project requirements.
- Safety precautions are reviewed in what is described as a pre-offload discussion.
- Shelter was then lifted and put on truck bed for transport to site location.
- Secondary safety discussion takes place with the offload crew at the site location.
- Shelter is again lifted and set on the concrete foundation pad.
- Final process includes anchoring the shelter to the concrete foundation.





# ELECTRICAL AND GROUNDING

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

Before the completion of the project, it is necessary to determine and install all necessary electrical and grounding materials needed to power the job site.

For electrical purposes, the term grounding refers to ground or earth as a reference point in an electrical circuit from which voltages are measured. This includes a common return path for an electric current or a direct physical connection to the earth. A ground wire is designed as an additional path for electrical current to return safely to the ground without danger to anyone in the event of a short circuit.

In this example, all of the electrical is serving both the AC and DC side. All of the important power equipment inside the shelter is running on DC power at 48 volts, while things like the lighting and HVAC systems are running on standard AC power.

# ELECTRICAL AND GROUNDING

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

An ATS (*Automatic Transfer Switch*) was installed for the generator on the outside of the shelter, while a battery backup system was built to back up all DC powered equipment inside the concrete shelter.

Automatic transfer switches with built-in controls will monitor your standard telecom power supply and detect any interruptions. When the utility power does fail, the transfer switch automatically starts the on-site generator and transfers the electrical load once the proper voltage and frequency has been reached.

AC power was ordered from the electric company and a meter was placed on the side of the shelter to hook into the main electrical system. The ground ring was installed to anticipate any unwanted power surge or static build up at the project site.



# COMPLETION OF PROJECT

(THE DEFINITIVE GUIDE TO TELECOM CONSTRUCTION)

With final grading performed around the shelter, the surrounding landscape was reseeded and a rock driveway was created to provide a proper entrance to the site area. As part of this Fiber-to-the-Home process, ImOn was able to begin network expansion in a specific area of Cedar Rapids by executing three key phases:

1. Installation of the fiber network (*underground network or aerial construction*).
2. Network testing at the service pedestal or pole.
3. Restoration of the easement or right of way near or on your property.

This network expansion allowed for the introduction of fast and reliable fiber optic cable, with speeds reaching up to 1 Gig (*1,000Mb*). Customers in the area are also avoiding bottlenecks or slowdowns during peak hours as the connection is not being shared.

Check out our video exploring this project, with comments from ImOn's Bernard Dutchik. Search the following on YouTube: ImOn This is the Internet (*or click the image*).





# BDC GROUP INC

# CAPABILITIES

## COMPANY OVERVIEW

BDC Group, Inc is a solutions-based business, headquartered in Hiawatha, Iowa. We offer a wide variety of broadband and communications products and services for infrastructure development, expansion, and management. Our team has over 150 combined years of experience working in the communications and data networks industries. We provide solutions to communication and broadband organizations, as well as local, state, and federal government entities. You can count on our skilled team of professionals to deliver the customer service and project management you expect. Our reputation of honesty and integrity is paramount to BDC, and our team's success is only measured by our customer's satisfaction.

## CORE COMPETENCIES

### OSP CONSTRUCTION

- Audit & Site Survey
- General Contracting
- Construction & Red Lines
- Project Management
- Fiber Optic Infrastructure Services
- Directional Boring and Plowing
- Fiber Splicing
- Equipment Relocation
- General Restoration
- Maintenance & Refurbishment
- Service Agreements
- Electrical Services
- Grounding Inspections & Repairs
- DC Plant Design & Installation
- Generator Install & Maintenance

### TELECOM SITE DEVELOPMENT

- New Shelter Design
- Custom Shelter Manufacturing
- Surplus Shelter Procurement
- Surplus Shelter Refurbishment
- Permitting and Site Work
- On-Site Foundation
- Architectural Enhancements
- Delivery, Crane & Assembly
- Electrical
- Decommission Services
- Power Equipment
- Fire Suppression
- HVAC
- Generators
- ATS

### ON-DEMAND SERVICES

- Infrastructure Expansion
- Maintenance Planning
- General Construction
- Project Management
- Site Audits & Builds
- Decommissioning Services
- AC/DC Electrical Install/Maintenance
- Boring and Plowing
- Fiber Jetting
- Fiber Splicing
- Emergency Response
- FTTX Service Drops
- Concrete Work
- Trenching
- Restoration

## PAST COMPANIES WE HAVE WORKED WITH

- FAA
- NASA
- American Tower
- AT&T
- City of Cedar Rapids
- Crown Castle
- Nokia
- MidAmerican Energy
- CenturyLink
- FiberLight
- Google
- Local and State Governments
- Mediacom
- Northern Missouri Construction
- RUS-FTTH Projects
- Sprint
- Summit IG
- T-Mobile
- Verizon
- Windstream
- Zayo

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