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Modular Foundations for Datacenter Facilities

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Modular Foundations for Datacenter Facilities

ABSTRACT

This disclosure describes techniques for modular and incremental deployment of datacenter foundations. Per techniques of this disclosure, modular foundation blocks are manufactured off site and transported to the site are utilized to prepare the datacenter foundation. This can enable rapid deployment and is cost effective since the foundation needs to be prepared only for a portion of the datacenter facility that is planned for initial usage. Holes for securing datacenter infrastructure can be provided with high tolerances at an offsite manufacturing facility, thereby saving substantial time in onsite labor. Infrastructure deployment on a portion where the foundation is completed can commence while a remaining portion of the datacenter has its foundation prepared and leveled. The foundation can be designed to minimize a number of types of foundation blocks utilized to prepare the foundation.

KEYWORDS

- Datacenter
- Server hall
- Modular foundation
- Precast concrete
- Poured concrete
- Concrete slab
- Foundation block

BACKGROUND

Datacenter foundations are commonly built using cast concrete foundations whereby wet cement is trucked in and poured into place. The wet cement flows around a framework of steel rods and is left to cure in-situ. The process involves pouring concrete to cover the entire planned square footage of the datacenter during initial construction. This leads to a greater upfront capital expenditure, even if only a portion of the datacenter may be used initially. Additionally, the time

taken to prepare the entire foundation and pad for a facility slows down the rate of deployment of datacenter infrastructure.

DESCRIPTION

This disclosure describes techniques for modular and incremental deployment of datacenter foundations. Per techniques of this disclosure, modular foundation blocks are manufactured off site and transported to the site are utilized to prepare datacenter foundation. This can enable quick deployment and is cost effective since the foundation needs to be prepared only for the portion of the datacenter facility that is planned for initial usage.

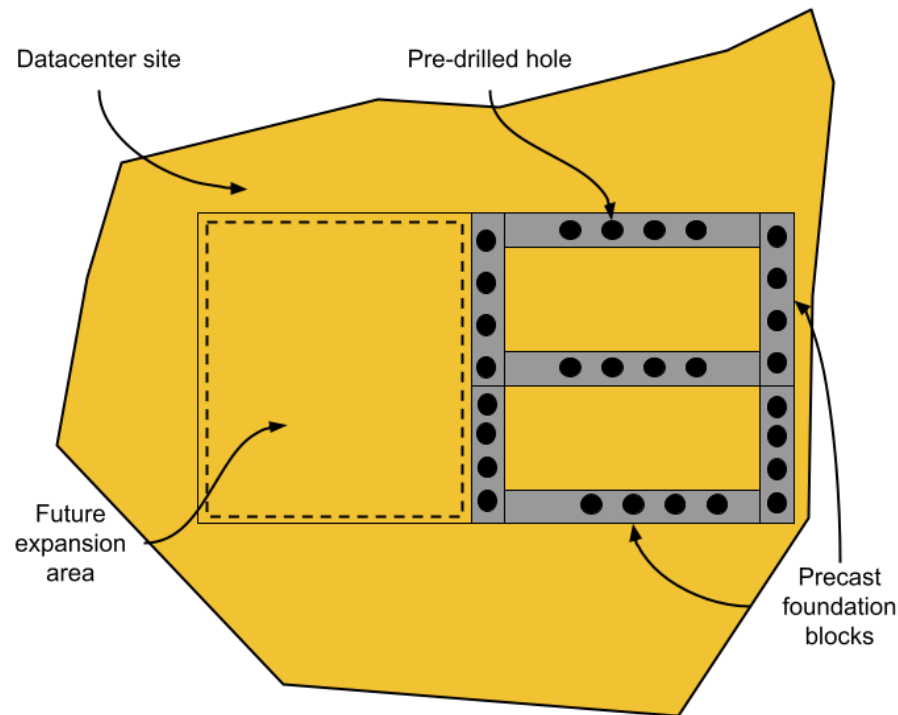


Fig. 1: Precast foundation blocks utilized for datacenter foundation construction

Fig. 1 depicts an example datacenter site. As depicted in Fig. 1, precast foundation blocks are utilized to prepare a datacenter foundation. The foundation blocks can be craned into place and leveled using leveling lifts.

Construction of datacenter infrastructure commonly requires drilling of thousands of holes in the foundation structure to locate and secure server hall infrastructure. When utilizing precast foundation blocks, provision of holes can be made with high tolerances at an offsite manufacturing facility, thereby saving thousands of hours in onsite labor. Additionally, infrastructure deployment on a portion where the foundation is completed can commence while a remaining portion of the datacenter has its foundation prepared and leveled.

The foundation can be designed to minimize the number of types of foundation blocks utilized to prepare the foundation. In some designs, as few as three distinct part numbers of precast foundation blocks may be sufficient to cover the datacenter (server hall and equipment yard) footprint.

CONCLUSION

This disclosure describes techniques for modular and incremental deployment of datacenter foundations. Per techniques of this disclosure, modular foundation blocks are manufactured off site and transported to the site are utilized to prepare the datacenter foundation. This can enable rapid deployment and is cost effective since the foundation needs to be prepared only for a portion of the datacenter facility that is planned for initial usage. Holes for securing datacenter infrastructure can be provided with high tolerances at an offsite manufacturing facility, thereby saving substantial time in onsite labor. Infrastructure deployment on a portion where the foundation is completed can commence while a remaining portion of the datacenter has its foundation prepared and leveled. The foundation can be designed to minimize a number of types of foundation blocks utilized to prepare the foundation.