

Planning: The Key to On-Time Construction

Introduction

Water wells are designed from the outside to the inside. What does that mean? To properly design water wells, one must first analyze the aquifer and understand its properties (thickness, permeability, gradation of the sands and gravels, or competence of the aquifer etc.). Then, one moves inward to the filter pack; again thinking outside to inside, one selects the filter pack gradation based on the gradation (if any) of the aquifer. Lastly, one selects the slot size (i.e., opening) of the well screen.

Planning, likewise, should follow a similar pattern to that of well design. In other words, to properly plan for well construction, one must first decide when the casing and screen are needed to be on site. Then, after that is done timing for ordering, shipment and delivery will fall into place. Think of that as working from the outside to inside, if you will. Why? Well, if the contractor has any expectation of installing the casing and screen without having to wait for them, they must be on-site before they are needed. While that should be obvious, all-too-often the planning for ordering-shipment-delivery-installation is short-sighted with too little thought about the consequences of delays, which can and do occur despite the best laid plans of the owner, manufacturer, and contractor.

This memorandum is intended to provide a reminder in real terms as to the importance of pre-planning to ensure that well casing and screens are on site when they are needed to avoid delays and undesirable consequences for the owner.

Scenario

When a well drilling contractor approaches each project, the planning for the delivery of well casing and screen is always done from the date needed (outside) to the time when the order should be placed (inside). Likewise, when a water purveyor is planning a project, the timeline is similarly prepared. The planner/designer decides when construction must be completed and then work backwards. Let's assume that for this example, the owner is a foreign water entity which has its own drilling rigs, and that the planner/designer is responsible for providing the well casing and screen to the drilling department. In order to ensure that the well construction will flow seamlessly along, it is vital to work from the outside to inside to have both casing and well screen available when they are needed. The timeline can be established from the answers to the following questions:

1. What is the date when drilling is planned to begin? This is the "outside" date.
2. How much time will it take for overland transport from the port of entry to the storage site or well site?
3. How much time will be needed to clear the shipment through the Customs Office at the port of entry? (It is probably wise to assume that delays are inevitable.)
4. How much time will be needed for overseas shipment of the container(s) from the manufacturer's plant to the port of entry at the destination country? (This estimate should include the elapse time (days) at the point of embarkation when the container(s) await loading onto the shipping vessel.
5. How much time will be needed to manufacture the required quantities of well casing and well screen? (The manufacturer will provide this estimate.)

6. How much time will be needed to prepare and process the purchase order through the procurement office?
7. When should the *pro forma* invoice be submitted to the procurement office?
8. When should the quantities of casing, well screen, reducers (if needed) and centralizers be submitted to the manufacturer or its representative in order to get the pro forma invoice for the materials? (This is the “inside” date.)

Once the “inside date” is determined the planner/designer should commit to meeting the timeline so that procurement, manufacturing, shipment, and delivery can be established. Each step thereafter should always be considered as “hard dates”; that is, every effort should be made to meet the timeline so that delays can be avoided.

Even with the best laid plans in place, unanticipated delays seem to be inevitable. Therefore, building in some extra days for those delays is always a good thing. If one is fortunate to avoid delays, then the process will be expedited and completed ahead of time.

Summary

There is no substitute for planning on well construction projects. The delivery of well casing and screen to the drilling site is the lynch-pin of projects. If a borehole drilled in incompetent rock or sediments is completed before the delivery of the casing and screen, the borehole will have to stand open and unsupported. Depending upon the type of drilling equipment that is used, this might require the driller to circulate for many hours or even redrill the borehole in the event of caving and collapse.

The judicious planner is one who looks ahead, plans accordingly, marshals the ordering and delivery process, and ensures a timely delivery of materials well in advance of the time when they are needed.

About the Author

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