CONSTRUCTION OBSERVATION TRAINING

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Effective construction observation begins long before ground is broken. Proper training of construction observers is critical to the overall success of a project. Companies should have a process in place to ensure that when the construction observer is in the field, they are familiar with the project and know what to watch for. Training a construction observer varies greatly from training an engineer or designer. Designers have design guidelines and textbooks that detail different aspects of a design. On the other hand, construction observation is best learned from personal experience in the field with contractors. However, with the diversity of products and designs that are being installed, it is impossible to prepare a construction observer to deal with every situation that may come up in the field. An effective training program will take a construction observer through all aspects of the design, permitting, bidding, and construction of a project. The construction observer should also be trained in the areas of site safety, submittal review, change orders, pay requests, daily logs, and project completion. Effective training will teach the construction observer a process and help develop good habits while in the field.

There is no substitute for actual field experience; however, most companies do not have the time or the budget to complete all of the necessary training in the field. This is a process that could take years to complete. While it is important to do as much training as possible in the field, the bulk of the training should be done in a more efficient manner. The development of a training manual is a good place to start with the training process. The training manual will assist in developing a process that can be repeated with each new hire, instead of recreating the training from scratch and having inconsistencies between employees. The training manual should include detailed descriptions of each phase of the construction project and examples of lessons learned on past projects. As more experience is gained, processes may change and there will be more lessons learned. These can easily be added to the manual and incorporated into future training. Throughout the manual, there should be examples of various paperwork that will be a part of the construction process. This should include:

- Inspection logs
- Submittal Review Forms
- Change order forms
- Pay request forms
- Sample Meeting Agendas
- Certificate of Substantial Completion
- Certificate of Final Completion

These samples should include blank forms as well as examples of completed forms that can be used for reference.

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After the construction observer has gone through the training manual and understands the content, a quiz should be given after each chapter. The trainer can then review the quiz and make sure that the new construction observer understands the material. If there are areas where understanding appears to be lacking, then both parties can go through this area in more detail to make sure there is clarity before moving on.

One of the most important areas of training and the first thing that should be reviewed is site safety. Before a construction observer even sets foot on his/her first project, they need to fully understand site safety and its importance. This includes knowledge of OSHA regulations and general site safety. There will not be sidewalks or areas that are roped off for observers in the field. The construction observer should always check in with the site superintendent or crew foreman prior to walking around the site. This way the contractor knows they are onsite and can give them an idea of where to stay out of the way and what type of work will be done. The construction observer should wear appropriate Personal Protective Equipment (PPE) in the field at all times. This includes steel toe boots, safety glasses, a reflective vest, and a hard hat. The construction observer should be aware of the project site at all times, and can be aware of dangerous situations that may be developing while the contractor is working. For example, if a trench wall looks like it is about to collapse on pipelayers, the observer can let the workers know they should get out of the trench until it is safe. Site safety should be taught early in the training process and reiterated frequently throughout employment.

In order for a construction observer to be effective in the field, they need to understand the entire process of a project. This starts with project marketing, moves into the report phase, design, permitting, bidding, and finally construction. Each company has its own process in place and if the construction observer understands each of these phases, then they will be better equipped to answer questions that may arise in the field. The training manual should describe each process in detail and the construction observer should understand that before going into the field, they should meet with all parties involved with each phase of the project. This will give the construction observer a history of the project and help them understand what the owner’s needs and expectations are prior to starting construction. The designer can also help explain the various nuances of the project that may differ from previous designs. In many northern states, the construction season is only 6 to 8 months long. If the construction observer understands the entire process, they can be very valuable in assisting in different areas during the winter months when they are not in the field.

The permitting of a project is an area that can go overlooked in the construction process. Many times there will be requirements in the permit that require notification of the permitting authority at various times during the construction process for them to conduct site visits and inspections. The designer was likely involved in the permitting of the facility, but if the construction observer does not review the permit, notification of the permitting authority may not occur. A discharge permit may be the only permit that has been secured at the time construction is ready to begin. If this is the case, the construction observer may need to secure additional permits such as a stormwater permit, a wetland permit, and a utility permit. Samples of these permits should be included in the
construction manual to assist the construction observer with the application process. Most construction projects require the contractor to submit information about each product they will be using to complete the project. The construction observer should review these materials with the designer to ensure they conform to the plans and specifications. This can be a very time consuming process, but it is a very important aspect of the project. If products are approved that don’t meet the specifications, disputes will likely arise when it comes time to install these products. Submittal review should be used to check power requirements, pressure ratings, duty points, and other details of each product. This detailed review and approval will further help the construction observer understand the project prior to going into the field. The training manual should detail what areas to look for when completing the submittal review on different products. It should also explain the process for approving or not approving the product and where to distribute copies of the completed submittals.

Everything discussed thus far needs to be reviewed with the construction observer prior to them going in the field. There still has not been any discussion related to what to do and look for while in the field during the construction process. It is very important to establish a base knowledge of the background of the project and develop an understanding of the plans and specifications before heading into the field. One way to be efficient with training time is to show photo presentations of various components of a project being installed. Past project photos of tanks, liners or trenches being installed will give the construction observer an idea of what they will be observing in the field. Photo presentations can be completed in a few hours where the actual installation may occur over days or weeks. The construction observer should understand the importance of good photos because they are a visual record of the project. Good photos can also be used for future training. Be sure each construction observer is equipped with a digital camera prior to heading into the field.

Inspection logs may be the single most important piece of documentation that will be prepared by the construction observer. Sufficient time should be set aside for explaining the importance of this paperwork. It is important that inspection reports are filled out daily when the observer is onsite during construction. When the project is complete, the entire construction process should be able to be recreated using the inspection logs. At the end of each week or as time allows the inspection reports should be reviewed by the trainer or the designer and discussed with the construction observer. If there are questions that came up in the field, they should be recorded and may be answered at this time. Events that may seem trivial at the time, have a way or resurfacing in the future so it is very important to document even the most trivial activities while in the field.

Checklists are another very important tool that can be used in the field by the construction observers. Copies of checklists should be included in the construction manual and the process for filling them out should be reviewed with the trainer to ensure full understanding. The checklists can serve as reminders of what to look for during construction. For example, a tank checklist should include:

- ☐ Proper bedding material
When the construction observer is in the field with the checklist, they will remember to check all of these items. The construction observer should also continue to develop and improve these checklists to assist with future training.

Pay requests and change orders are often the responsibility of the construction observer. These should be reviewed in detail with the construction observer prior to construction and also the first few that are completed during a project. The training manual should explain how to fill out the forms and verify quantities. It is important to be accurate when completing these forms. Change orders are often viewed by owners as being negative. Most owners think that change orders mean the project is going to cost them more money. This is not always the case. During construction, if the contractor and the construction observer see ways to save money by making construction easier, there can be a deduct, or decrease in contract price. However, if there is a change in condition or addition to the project, the price will likely increase. Good communication between the owner, contractor, and construction observer will help make the pay request and change order process progress smoothly.

During the construction process, the construction observer should be conducting regular meetings with the contractor and the owner. This will help everyone stay informed about the progress of the project. During these meetings, the construction observer should request a written schedule from the contractor. This will help the observer schedule site visits and notify various homeowners that they may be impacted by construction activities. The construction observer may also need to notify the permit authority for site inspections. The meetings can also be used to discuss pay requests, change orders, or plan and specification clarification. The construction observer should be comfortable leading these meetings and be prepared for problems that may arise. They should also understand that if they don’t understand something or are asked questions that they don’t know the answers to, that they should not make something up. These questions should be answered later after the right answers are researched.

The construction observer will be the most visible person from the company in the field. They need to understand that they are representing the company and should follow all
company rules while in the field. They will also be the first person the owner or the contractor contacts when something goes wrong with construction or operation of the system after it is completed. They will also be contracted by homeowners if a community system is constructed. It is very important to maintain good communication with everyone involved in the project. The owner needs to be comfortable that they are getting their money’s worth out of the project. The contractor needs to know that they are constructing the project properly and that it is going to work when it is finished. Homeowners need to understand when construction activities will impact them, that there will be disruption, there will be a mess, and that it will take time for things to go back to the way they were.

Once a project is complete, the construction observer’s job is not finished. A punch list needs to be developed and reviewed with the contractor. Retainage may be held until the entire punch list of items are completed. The contractor should provide as-built drawings that may need to be filed with the permitting authority and distributed to the owner. Most projects have a 12 month warranty. The construction observer should meet with the contractor and the owner after 11 months to walk through the system and make sure there are no warranty items that need to be addressed. If the project is a publicly owner system, as-built drawings may need to be filed with a locating service so locates can be done if future projects take place in the same area. The construction manual should detail all of this post construction follow-up that needs to be completed.

Construction observation is very important to the success of a project. Having well trained personnel in the field helps ensure this success. Time spent initially in the training of construction observers can reap great rewards in the future. A training manual is a very important component of the training process along with photo presentations, and communication with everyone involved with the project. The more fully the construction observer understands the process, the better they will be able to adjust to different situations in the field. The end result will be a finished product that everyone will be satisfied with.