

APPENDIX

B

Pre-Construction Meeting Topics

As a group, all parties should visit the sub-grade together to agree on standards/expectations

General

- Construction Schedule
- Start Date
- Expected duration
- How many days per week
- Work hours each day
- Night shift/Day shift
- Cold Weather Planning (if applicable)
- Jobsite Specifics
- Work Restrictions
 - Are there any restrictions on work days or hours?
- Site Access
 - Are there any restrictions on access to the site?
 - Procedures will need to be discussed, keys issued, etc.
 - Site sign-in procedures/requirements should be discussed
- Work Trailer
 - Where can installer work trailer be set up?
 - Is there space available for the CQA personnel to store/work?
- Equipment fueling procedures. Where can equipment be fueled on site?
 - Fueling within the impoundment, may be prohibited on certain sites
- Discuss any oddities on this jobsite not commonly found on other jobsites
- Project Specifics
- Discuss any oddities on this project not commonly found on other projects
- Exchange contact info
 - Contractor's chain of command - who does CQA report problems/issues to?
- Are there any minimum experience requirements for installation crew?
 - Has this information been obtained?
 - Have resumes been obtained for seaming personnel?
 - What is the process if alternate personnel will be used for seaming on the project?
 - What installation crew will be on site? If there are problems with the proposed crew, it should be discussed.

- Discuss the approach to be taken by the installer, such as whether they will focus on "black-out" with detailing later, or simultaneous detailing
- Find out if the installer has, or will be performing internal trial welds with the material to make sure equipment is properly set-up prior to first day of deployment
 - This can avoid a lot of delays and problems on the first day
- General sequencing timeline (subgrade prep, geomembrane, cover materials, etc.)
 - How will all of the required as-built survey events be handled?
 - Who will be responsible for coordination of survey events?

Traffic Patterns

- Where is the staging for the material?
- What is the expected traffic pattern to/from the staging area?
- Are there any areas along the flow of traffic that may require additional safety precautions? I.e. flagger, signs, cones, etc
- Any other site-specific issues?

Specs, CQA Plan, Drawings

- Specifications / CQA Plan
- Conflict resolution procedure on future disagreements that may arise
 - What document takes precedence in the event of conflicting information? Do all parties have access to this information?
- Plan Drawings
 - Review plan drawings to make sure applicable parties are aware of the work area, access, etc.
 - Discuss details and ask if anyone has any questions pertaining to the details.
 - Discuss any potential issues / concerns / or project specific items
 - Ensure all parties have the most current drawings and documents
 - Who will be responsible for distributing revisions to all parties?
- As-built drawings
 - Who is responsible for creating the drawings?
 - Is a panel layout drawing being provided?
 - What information is required on the

drawing? (Destructs, repairs, intersections, etc.)

- Is the panel layout drawing based off a field survey using professional survey methods?

Deliverables

- Everyone should be issued a list of deliverables (and due dates) that was created during the meeting
- If Installer's QC paperwork will need to be submitted on a given schedule, these expectations must be discussed.

Safety

- What are the safety requirements for the job?
- Where and when does installer perform pre-shift tailgate meetings?
- Are there any specific safety issues pertaining to this particular project?
- As every construction task/subtask is discussed, pertinent safety issues associated with each should be discussed

Regulatory Agency

- Has the regulatory agency been notified of the pending start of the project?
- Has the regulatory agency had any issues from previous projects at this site that should be discussed prior to construction?
- Any agency approvals outstanding?
- Does the agency need to be on site for subgrade approval or inspection prior to geomembrane installation beginning?
 - If yes, who is going to make sure notification occurs?

Subgrade

- Timing/Sequencing
 - When will the subgrade be ready?
 - How much subgrade will be needed on a daily basis?
 - Is the installer going to try to cover all of the subgrade first, and then fall back on detailing?
 - Where will the contractor begin deployment and in which direction will they place the liner?
- Preparation
 - How is prepared subgrade going to be maintained until covered with geomembrane?
- Survey
 - Who is going to schedule the surveyor for certification of the subgrade grades?
 - How is the survey data going to be sent to applicable parties for review?
 - What is the method that will be used to remedy any problems (if any)?

- How will approved areas be relayed to the installer/contractor?
- Field Inspection
 - What is the sign off procedure required for approval?
 - How will approved areas be delineated?
- Safety Topics

Material

- Submittals
 - Have material submittals been submitted to the regulatory agency for review...and what is the status?
 - Is there enough material approved to complete the project? If not, what is the plan?
- Shipping/Receiving
 - Has any material been shipped yet? If not on site, when is estimated arrival?
 - Has any material been received yet? If so, where is it stockpiled?
 - Where can the material be off-loaded?
 - Site access requirements may need to be discussed (such as no access on Sundays, etc.)
 - Off-loading procedures should be discussed.
- Material Inventory
 - Has material received on site been inventoried?
 - Is there any material that has not been approved yet?
 - What is the process for these materials? Is retesting being performed?
 - Any material not yet approved for use should be supplied as a list to all parties attending the meeting and updated on a regular basis.
 - The contractor should segregate any materials into separate stockpiles based on approved, pending, and rejected
- Are there any rejected materials on-site?
 - Rejected materials need to be clearly marked!
 - Rejected materials should be segregated in a different stockpile
- Are there any other materials on-site that can be used (perhaps remaining from previous projects)?
 - The location of these needs to be made clear to all parties
 - The paperwork will need to be obtained
- Are there any other materials on-site that cannot be used?
 - The location of these needs to be made clear to all parties
- Storage
 - Where is the material stored?
 - Is the material stored properly?
- Access
 - Are there any restrictions on access to the

- material stockpiles (i.e. if inside a building)?
 - Discuss haul routes from stockpiles to the work face and any potential interference issues with on-site operations
- Safety Topics

Deployment

- Discuss the specifications and review to make sure everyone is in agreement
- What methods of deployment will be used for specific areas of the project? (I.e. slope vs. floor, etc.)
- Discuss what equipment is allowed to operate on top of the geomembrane
- General deployment sequencing plan--how will deployment progress from beginning to end of project?
- Discuss temporary and permanent ballast procedures.
 - Timing of anchor trench backfill
 - Timing of protective cover, or other activities dependant on completion of installation (such as LCRS piping)
- Discuss sequencing to meet daily deployment requirements--a few examples below:
 - When GCL is deployed prior to geomembrane, it typically is required to be covered the same shift
 - Some specifications require that whatever material is deployed in a shift needs to be seamed in that same shift
- Discuss labeling of partial rolls with correct roll numbers
- Discuss CQA roles and responsibilities
 - Discuss with installer the amount of CQA coverage required for this task.
 - Discuss with installer any CQA requirements not in the specifications, such as obtaining and saving tags from each roll of material placed.
 - Discuss and agree on the panel identification prefixes
 - Discuss which party (QA or QC) is physically assigning numbers to the panels in the field
- Safety Topics

Trial Seams

- Discuss the specifications and review to make sure everyone is in agreement
- Trial seam procedures and requirements should be discussed
 - Discuss procedures for determining pass/fail in field evaluation
 - Where will the samples be tested
 - How will samples be cooled in hot temperatures prior to testing?
 - How will the installer make sure trial seams tested in appropriate temperature range?

- How will the installer or CQA select test coupon locations (should discuss who's responsibility as it can vary)
 - How will the installer make sure the test coupons are cut to proper dimensions for testing?
- Are archive samples required, and where will they be stored?
- Discuss specified test requirements (coupons required, values required, combinations required, etc.)
- Discuss approved temperature ranges for welding and equipment used to obtain the results
- Discuss protocol for dealing with failing trial seams
 - What happens after each successive failure by an operator or machine?
 - When is an operator or machine rejected for use?
 - What allows a rejected operator or machine to again perform production seaming?
- Discuss CQA roles and responsibilities
 - Discuss with installer the amount of CQA coverage required for this task.
- Safety Topics

Seaming

- Discuss the specifications and review to make sure everyone is in agreement
- What type of equipment is being used?
 - Have the welding processes been approved?
- Does the installer have spare equipment on site to perform welding in the event a machine breaks down or is rejected?
 - Some specifications actually require a said number of extra, fully operational, equipment to be maintained on site at all times.
 - Likewise, does the installer have spare parts on site to perform periodic maintenance?
- Has a proposed panel layout drawing been provided by the installer?
 - If yes, review the panel layout with all parties
 - If no, discuss panel layout, overlap shingling requirements, butt-seam requirements (especially on slopes), etc.
- Have the welding components been approved? (Such as welding rod, specific chemical adhesives, etc.)
- It should be stated that the expectation for seaming personnel is that they will mark suspect areas for repair as seaming progresses
- Are end coupons being cut from seams for installer evaluation?
 - If yes, what is the testing procedure for these?
- Discuss temporary welding procedures
- Are rub sheets going to be used below production seaming?

- If rub sheets are used, do they need to be removed?
- Discuss the documentation required on the geomembrane by the seaming personnel (ID initials, machine data, date, time, etc.)
 - Junctions should be discussed in detail, as seaming personnel often neglect to put information there--only at each end of long seam
- Discuss CQA roles and responsibilities
 - Discuss with installer the amount of CQA coverage required for this task.
- Safety Topics

Seam Continuity Testing (Non-Destructive Testing)

- Discuss the specifications and review to make sure everyone is in agreement
- Discuss the equipment that will be used in the testing process
 - Does the installer have spare equipment on site to perform testing in the event equipment breaks down or is rejected?
- Are calibration certificates required for the equipment? Have they been obtained?
- For vacuum test, discuss the overlap procedure and expectation that it is the viewable area, not the box perimeter
- Discuss the documentation that will be used on the geomembrane and who is responsible for it
- Discuss the isolation procedures for failed tests (particularly air pressure tests)
- Discuss any site-specific criteria above and beyond the specifications--for instance, if only a certain number of leaks are allowed in a certain amount of seamed footage.
- Discuss CQA roles and responsibilities
 - Discuss with installer the amount of CQA coverage required for this task.
- Safety Topics

Seam Destructive Testing (Interval Sampling)

- Discuss the specifications and review to make sure everyone is in agreement
 - Discuss the specific testing procedures to be used (such as ASTM), as cut and paste specifications could result in lab errors
- Discuss the testing laboratory qualifications
- Discuss the expected maximum sample failing percentage
 - Discuss what happens if/when this percentage is exceeded
- Discuss the frequency of sampling
 - Discuss things that can alter the frequency (increase or decrease)
- Discuss the size requirements for the sampling
 - Is an archive sample required; if so, size?

- Who is responsible for collecting the archive samples?
- Is a sample being field screened by installer prior to shipping; if so, size?
- Is the installer obtaining an independent sample for archive or laboratory testing; if so, size?
- Discuss the locations of sampling
 - Are there any areas that are off-limits?
 - How are the locations being determined?
- Discuss whether or not repairs will be subjected to destructive testing
- Discuss all things that will result in prompt sample results turnaround
 - Discuss the shipping deadlines and what will be done to meet these deadlines
 - Discuss the laboratory turnaround requirements
 - Discuss the turnaround time from completion of seaming to marking destructs
 - Will completed non-destructive seam testing be required before samples are marked?
 - Discuss turnaround time from marking of samples to removal of samples
 - Discuss field testing requirements and procedures
 - Discuss CQA roles and responsibilities in terms of field testing observation/documentation
 - Discuss procedures for determining pass/fail in field evaluation
 - Where will the samples be tested
 - How will samples be cooled in hot temperatures prior to testing?
 - How will the installer make sure test coupons are tested in appropriate temperature range?
 - How will the installer or CQA select test coupon locations (should discuss who's responsibility as it can vary)
 - How will the installer make sure the test coupons are cut to proper dimensions for testing?
- Discuss the bounding of failing samples
 - What constitutes bounding of a failed sample in both the before and after direction?
 - Does tracking go through different days or shifts?
 - Does tracking go onto other materials welded sequentially?(Such as when welding on multiple layers in the succession such as primary and secondary geomembranes).
 - Who is responsible for marking the tracking samples?
 - Will full samples be cut at the tracking locations, or just coupons?

- What method (s) of seam re-construction will be used?
 - Is there a maximum allowed failure distance before the entire seam will automatically be required to be reconstructed?
- What sample ID sequence will be given to distinguish tracking samples? (Such as A, A2, A3, B, B2, B3, etc.)
- Discuss CQA roles and responsibilities
- Discuss the review of laboratory results and who is responsible for making the pass/fail determination.
 - Discuss procedure for getting the laboratory results (physical data) to the installer (chain of command)
 - Discuss how the pass/fail determination will be relayed to installer (chain of command)
- Safety Topics
- Discuss the minimum size requirements for repairs (typically extension beyond damage)
- Discuss procedures to be used to prevent damage to base geomembrane or repair materials during preparation
- Final Repair
 - Discuss the intricacies of the seaming processes (beveling, wiping up chemical squeeze-out, etc.)
 - Discuss the requirements for seaming personnel to put on the repair (ID initials, machine, date, time, etc.)
 - It should be stated that the expectation for seaming personnel is that they will evaluate the seam as seaming progresses and replace deficient repairs
- Discuss CQA roles and responsibilities
 - Discuss with installer the amount of CQA coverage required for this task.
- Safety Topics

Repairs

- Are there any project specific guidelines required to, or being used? (Example, fusion weld all damage >10' in length)
- Discuss temporary repair procedures
 - Discuss methods to be used in identifying temporary repairs
 - Discuss procedures to be used to prevent temporary repairs from being left as a permanent repair
- Damage Observation and Marking
 - Discuss methods being used to ensure all damages are indeed repaired
 - Discuss inspection and repair of areas where work may have been performed prior to arrival on site, such as tie-ins?
 - What number sequence will be used for repairs?
 - Will the same numbering sequence be used by both QC and QA?
 - Discuss damage marking expectations (such as seaming personnel mark suspected damages)
 - Discuss the different repair types and what will be used for different types of damages
 - Discuss the abbreviations to be used on the geomembrane for the repair crew to follow
 - What constitutes an excessive amount of damage?
 - What will be done if an excessive amount of damage exists in a specific sized area?
- Damage Preparation for Repair
 - Discuss the rounding of cuts in the geomembrane
 - Discuss efforts to be taken to minimize size of cuts in geomembrane
 - Discuss methods used to ensure a firm welding substrate exists below the repair area
- Repair Preparation

Final Walkthrough

- Discuss which parties will be expected to attend the walkthrough
- Discuss "clean" geomembrane expectations for performing a final walk
- Discuss process for determining an area is ready for a final walkthrough (chain-of-command)
- Discuss methods to be used for repairing any damages, etc. that are found during walkthrough
 - How will traffic paths be minimized?
 - How will verification of deficiencies be handled?
 - Will additional walks be performed once deficiencies corrected to verify no incidental damage in traffic areas?

Cover Materials

- Discuss CQA roles and responsibilities
 - Discuss with owner the amount of CQA coverage required for this task.
- What materials overlay the geomembrane?
 - Geosynthetics
 - How will any geosynthetics materials be deployed?
 - How will the installation procedures ensure the underlying geomembrane is not damaged?
 - What ballast will be required for temporary anchoring?
 - Can this ballast be left in place upon conclusion of installation or must it be removed?
- Soil Cover
 - How will the material be placed?
 - How will the placement of materials ensure the underlying geomembrane is not damaged?