

CONSTRUCTION REQUIREMENTS

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**ALL GUIDELINES REFERENCED
IN THIS PRESENTATION ARE
AVAILABLE FOR DOWNLOAD
ON OUR WEBSITE:**

[https://www.tceq.texas.gov/compliance/
investigation/damsafetyprog.html](https://www.tceq.texas.gov/compliance/investigation/damsafetyprog.html)

WHEN DO I NEED AN ENGINEER?

- All dams deteriorate
- In spite of proper maintenance, repairs/rehabilitation beyond normal operation and maintenance (O&M) sometimes become necessary
- Downstream development may result in hazard classification change and need to upgrade the dam
- Engineer provides the expertise to perform this work

WHEN DO I NEED AN ENGINEER?

When the proposed project meets TCEQ's criteria for needing our approval – reference our *Design and Construction Guidelines for Dams in Texas* for related guidance:

- Easier to navigate than rules, so recommended starting there for answers.
- Nevertheless, the Chapter 299 rules indicate that:

WHEN DO I NEED AN ENGINEER?

“All engineering plans and specifications, inspections, reports, and records for the construction of a proposed dam or the reconstruction, modification, enlargement, rehabilitation, alteration, or repair of an existing dam in Texas must be prepared by, or under the direct supervision of, a professional engineer (licensed in the State of Texas) with direct responsibility for the analysis of the dam. All applicable proposed construction projects—as defined in 30 TAC 299.21, “Applicability”—must fulfill all construction requirements, including the submission of the engineering plans and specifications to the TCEQ Dam Safety Program, and their review and approval by the program.”

WHEN DO I NEED AN ENGINEER?

If you need an engineer, then
understand that it needs to be a
Texas Licensed Professional Engineer

WHEN DO I NEED AN ENGINEER?

Is the project a Proposed (new) “dam”?

Well then yes, it will need TCEQ Dam Safety’s approval (seems pretty obvious, right?). But it may not require our approval if:

- Excluded (per height/volume & low-hazard classification)
- Exempt (per legislation – verbiage now in Chapter 299 rules)
- If small-size, low-hazard, and does not require a Water Right Permit or Edwards Aquifer Protection Plan (need engineer – but not TCEQ Dam Safety’s approval)
- Consider may need engineer to prove low-hazard classification via a breach analysis

WHEN DO I NEED AN ENGINEER?

Is the proposed project a Major Modification?

- A major modification is one that will change the hydraulic or structural design or capabilities of the dam

WHEN DO I NEED AN ENGINEER?

Is the proposed project a Major Repair?

- A major repair is one that will NOT change the hydraulic or structural design or capabilities of the dam, but
- whose scope goes beyond normal maintenance, as defined by our *Guidelines for Operation and Maintenance of Dams in Texas* (O&M)

WHEN DO I NEED AN ENGINEER?

Is the proposed project a ‘minor’ repair?

- A minor repair is one that would typically be included in routine O&M duties (reference the O&M guidelines).
- Minor repairs do not need approval by TCEQ Dam Safety, but
- Some minor repairs should still be supervised by an engineer.

WHEN DO I NEED AN ENGINEER?

Is the proposed project a Removal, or a Permanent Breach Project?

- Should reference our current *Dam Removal Guidelines for Dams in Texas*
- Things have changed over the years

WHEN DO I NEED AN ENGINEER?

Consider Dam Removal if Cannot Maintain

- ‘Hydraulically Adequate Breach’ will not ultimately remove from TCEQ Dam Safety oversight
- Remove the entire dam to its natural channel; or,
- Remove enough of the dam embankment so that it no longer provides detention

WHEN DO I NEED AN ENGINEER?

Is the proposed project O&M (vs. 'something' more)?

- Sometimes a hard call to make
- Consider if reoccurring or worsening in severity
- If so, consider an engineer to determine the real problem to the symptom that keeps getting treated

WHEN DO I NEED AN ENGINEER?

Professional Engineer report may be required when there is a proposal to:

- Dredge the reservoir within 200 feet of the dam;
- Install a utility line or pipeline in the dam;
- Construct a road across the dam or spillways or within 200 feet of the dam;
- Drill oil or gas wells or oil or gas exploration within 500 feet of the dam; or
- Blast within ½ mile of the dam.

WHEN DO I NEED AN ENGINEER?

If the above still isn't clear guidance for your situation, then just give us a call to discuss whether or not you need an engineer.

SHOPPING FOR AN ENGINEER

- On our website, choose *Procuring the Services of a Professional Engineer and List of Engineers* and click on **Engineers List**.
- Includes many more details.
- Read 'preamble' prior to actual list.
- An engineer can also assist in selecting a contractor and can provide valuable construction inspection services.

SHOPPING FOR AN ENGINEER

Consider that you may need more than:

- one engineer (get multiple quotes)
- one option (to address issue)
- one option (phased approach?)
- one engineer (diagnostic vs. repair)?
- one engineer? (design and construction oversight – get quotes for each)

SHOPPING FOR AN ENGINEER

Ensure the engineer is QUALIFIED:

- Request references and contact them to discuss the engineer's performance.
- Get a list of past projects – photos of completed work?
- Did past projects require approval by TCEQ Dam Safety?
- Carefully consider your selection – a little extra work to ensure the right engineer may save money in the future.

SHOPPING FOR AN ENGINEER

TCEQ's *List of Engineers*:

- Alphabetical list of engineers that have requested to be placed on the list.
- TCEQ does not pre-certify, recommend, or endorse any of the listed engineers.
- An owner is not obligated to hire an engineer on the list.
- Any Texas licensed professional engineer experienced and **familiar with dam construction and design and TCEQ rules** can be used.

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

Draft Plans/Specifications/Reports (Design,
Geotechnical, etc.):

- Should submit enough to provide needed context for a 'worthwhile' review
- Not earlier than 30% draft
- 60% or 90% draft submittals are more typical

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

One big .pdf:

- Becoming more common – not a fan – hard to navigate
- Some with bookmarks, some not; regardless,
- Cross-referencing different portions (Geotech vs Plans vs Specs) simultaneously is not facilitated
- Helpful if broken down (Design Report, Geotech, Plans, Specs, etc.) – will facilitate your review times

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

Plan for emergencies during construction - per
§299.22(d)(2)(C):

*“a plan for addressing possible emergencies that threaten the integrity of the dam for **all proposed** high- and significant-hazard dams during construction. This plan must include:*

- i. a flow chart for notification of emergency management officials and the downstream public;*
- ii. identification of possible emergencies that could occur during construction and potential consequences*
- iii. technical requirements for addressing any possible emergencies; and*
- iv. responsibilities of all parties”*

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

Plan for emergencies during construction :

- In *Design and Construction Guidelines for Dams in Texas*, it is listed under submittal requirements for *New Dam or Major Modification Project*.
- Should have been an “if applicable” designation for this item in the list, same as the last two/subsequent items (bullets) in the first occurrence/listing.
- Same for *Closure Plan* – should state “if applicable”, as most projects do not entail this.

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

Final Submittal:

- Ensure signed/sealed and all references to 'Preliminary', 'Draft', 'For Review (or Bid) Only', 'Not for Construction' are removed from the final set.
- Ensure Form TCEQ-20345 has been signed by an authorized representative of the dam owner.
- If not Primary Contact per TCEQ, be prepared to answer additional questions and possibly provide additional information.

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

Review process and timeframes:

- Typically lasts about a month.
- If TCEQ has a large amount of plan reviews in-house at the time, then ‘finalized’ plan get priority, and sometimes ‘draft’ plan reviews take longer than a month.
- TCEQ Dam Safety will respond to construction plan reviews either requesting additional information/revisions or approving the plans.

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

Hard copies of finalized submittals:

- TCEQ may request – TCEQ's Central Records have not gone (solely) digital, yet.
- If TCEQ has a digital copy of the entire submittal, then do not necessarily need to submit hard copies of all appendices (again, sometimes exceeding a thousand pages of data), unless specifically requested.

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

After construction plan approval:

- The construction project may commence; however
- If there's an affiliated (& not yet approved) Hydrologic and Hydraulic (H&H) or Breach Analyses, electing to commence construction may be 'at your own risk'.
- Potentially ensuing needed revisions to H&H or Breach Analyses could subsequently result in future needed revisions to approved construction plans.
- If already started construction, then revisions to approved construction plans would be processed as a Change Order (could be more costly).

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

When is it an Emergency Repair (do not need to submit construction plans)?

Reference §299.45, which notes the following requirements:

- Undertaken under supervision of a P.E.
- May start without E.D. approval.
- Notify E.D. within 12 hours after emergency discovered and evaluated.
- P.E. prepared plans for permanent repairs after emergency. Must be approved.

CONSTRUCTION PLAN SUBMITTAL AND REVIEW/APPROVAL PROCESS

When is it an Emergency Repair (do not need to submit construction plans)?

- Consider the true intent per the rules, which is
- Not intended to provide an 'out' for historic O&M issues that are finally at their breaking point (due to deferred maintenance).

ENGINEERING OVERSIGHT DURING CONSTRUCTION

- Rules require an engineer to provide needed oversight.
- An engineer will need to ultimately ‘sign-off’ on the project – they will need to complete an Engineer’s Notification of Completion (Form TCEQ-20347).
- Can be different from the design engineer, if necessary.
- On-site inspectors need to be under the supervision of the engineer.

ENGINEERING OVERSIGHT DURING CONSTRUCTION

- Protect your investment.
- Make sure the contractor does the work proficiently and per the approved construction plans.
- TCEQ Dam Safety has seen plenty of well-engineered designs not get built correctly due to lack of engineering oversight.

ENGINEERING OVERSIGHT DURING CONSTRUCTION



ENGINEERING OVERSIGHT DURING CONSTRUCTION



CONSTRUCTION WITHOUT AN ENGINEER

- Liability increase.
- Could make things worse, which
- Could lead to enforcement if modifications/repairs, ensuing deterioration, etc. should ever result an unacceptable threat to public safety, or
- Could nullify prior determinations, including results of prior Hydrologic and Hydraulic (H&H) studies on record with TCEQ (could affect a dam's hydraulic adequacy).

CONSTRUCTION WITHOUT AN ENGINEER



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SITE DEVELOPMENT ENGINEERS

- Developers rapidly becoming owners of (state regulated) detention dams.
- More local (city/county/etc.) plan reviewers are ‘flagging’ and routing through us to determine if state regulated.
- Most have already been designed – and not to TCEQ standards (designed per 100-yr floods, for ex.).
- Often results/requires Full Breach Analyses to subsequently prove low-hazard classification (not state regulated).

SITE DEVELOPMENT ENGINEERS

- ‘Dam Engineers’ should educate their firm’s ‘Site Development Engineers’ on TCEQ’s requirements.
- Ultimate incentive is to avoid potentially lengthy delays in construction.
- Be prepared to submit a ‘TCEQ Dam Safety’ set of construction plans, with the ‘select’ sheets of the massive ‘overall’ development set.

ENGINEERING OVERSIGHT DURING CONSTRUCTION

— revisited —

- WITHOUT PROPER (INDEPENDENT) ENGINEERING OVERSIGHT, BAD THINGS CAN HAPPEN.
- DON'T LET THIS HAPPEN TO YOU.

BRAND NEW SPILLWAY



BRAND NEW SPILLWAY



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QUESTIONS?

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