Working with Regulated Drains

Road School 2014

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What is a Regulated Drain?

- IC 36-9-27 Indiana Drainage Law
- Could have been established in one of many methods that include:
  - Circuit Court Drain
  - Commissioners Court Drain
  - County Drainage Board
  - There are many more as well
What is a Regulated Drain?

“Tiled Drain” means a tiled channel that:

1. carries surplus water; and
2. was established under or made subject to any drainage statute
What is a Regulated Drain?

“Open Drain” means a natural or artificial open channel that:

1. carries surplus water; and
2. was established under or made subject to any drainage statute.
Brief History of Regulated Drains

- As early as 1816 Drainage in Indiana Statutes
- 1852 first mention of a “group of landowners”
- 1863 the forefather to the current codes regarding regulated drains
- 1965 (40) previous acts combined into 1 code
- Code has been recodified once with only minor revisions since 1965
- What does this mean for you?
Basic Regulated Drain Terminology

- **Reconstruction** - Reworking an existing regulated drain, enlarging, deepening, etc.
- **Maintenance** - Basic maintenance i.e. Repairing to original specifications
- **Construction** - Creating a new regulated drain
- **Tile Drain** - A subsurface regulated drain (clay, concrete, plastic, masonry, metal)
- **Open Drain** - Typically trapezoidal ditch
- **Urban Drain** - IC-36-9-67
- **Watershed** - Area of land from which all runoff water drains to a given point
How a Regulated Drain Typically Functions

- Three types of work
  - Maintenance
  - Reconstruction
  - Construction
- SEA 368 Process
- Assessments
- Public Hearings
Knowledge of Regulated Drain
Pain/Gain from Regulated Drain Projects

- Local Landowners
- County Surveyor and Staff
- County Drainage Board
- Consultant
- State
- Federal

Pain / Gain from Project
Where do I find records of Regulated Drains

- Old Roadway Plans
- Title Search
- County Surveyor’s Office
- Court Records
- Online GIS
- Locals
- Site Visit(s)
- Surveys
- Other?
I’m affecting a regulated drain what do I do now?

- Early Coordination
- Submit plans, specifications & hydraulic calculations
- Local approval needed (Typically through Drainage Board)
- Your project will be inspected
Typical Condition of Regulated Drains

**Tile (Subsurface)**
- Originally built around 1900
- May have been replaced, but records are typically limited
- Typically Clay tile
- If hydraulic sizing was completed it has been lost. Capacity usually ¼” (or less) in 24 hours
- If original, has exceeded design life
- May be difficult to find exact location
- NOT AN ADEQUATE OUTLET FOR STORM SEWER

**Open**
- Originally built pre 1900
- Has been maintained or reconstructed several times
- Limited records of reconstructions
- Channel capacity low
- Typically flat to very flat slopes
Submitting Hydraulic Information

- Required per IC-36-9-27-71

- Key phrases:
  - The surveyor shall hear objections to the requirements, and may then change the requirements as justice may require.
  - The county surveyor shall disapprove the plans and hydraulic data if they do not show that the structure will meet hydraulic requirements that will permit the drain to function properly.
Tile Drains

- Tiles were not sized for Stormwater Flow!
- Sizes can change quickly. Manholes are not standard!!!
- They can go anywhere (You may not know they are there)
  - Under buildings
  - Through other drains / sanitary sewers
  - If you can camera them, Do!!!!!!
  - Blind connections are standard
  - Repairs may have been made using substandard methods
- There may be more than 1 tile in the same area. Make sure it is the one you want.
- If you don’t want to upsize entire system you likely need to find an alternative outlet
Old Route
Which one is the one I’m worried about?
Open Drains

- Typically depth was originally determined to provide outlet to tiles
- Typically 1 year to 10 year capacity (could be less)
- Original crossings almost never meet current hydraulic design standards
- May have been significant alignment changes from original natural waterway
- Cross-Country Pipelines may limit what can be done
Original Channel

Highly erodible

“new” channel
Hydraulic Considerations for Open Regulated Drains (Manning’s Eq)

9’ CMP GF ~ 320 CFS

7’ Plastic Liner GF ~ 440 CFS
Hydraulic Considerations for Open Regulated Drains (Better Data)

Existing FIS

Local Study

Additional FP

Additional FP
What are some unique aspects of regulated drains?

- IC 36-9-27-17(d)
  - If the county surveyor determines that the regulated drain is not adequate to handle the additional flow of water resulting from the connection without being reconstructed, he shall deny the request, and the request may not be granted until the regulated drain is reconstructed under sections 49 through 52 of this chapter.

- IC 36-9-27-51
  - Whenever it becomes necessary to reconstruct a regulated drain that has become inadequate due to an increased flow of drainage resulting, in whole or in part, from a change in land use by one (1) or more owners of land affected by the drain, the board shall consider that fact in assessing benefits to pay the cost of the reconstruction, and the owner or owners necessitating the reconstruction shall be assessed accordingly.
What are some unique aspects of regulated drains? Continued

- IC 36-9-27-71
  - When the board finds that in the construction, reconstruction, or maintenance of a regulated drain it is necessary to:
    - (1) alter, enlarge, repair, or replace a crossing; or
    - (2) construct a new crossing where none existed before;
    - the cost of the work on the crossing shall be paid by the owner of the public highway.
  - A railroad company with a right-of-way that is:
    - (1) crossed by the construction of a regulated drain; or
    - (2) affected by the altering or enlarging of a crossing;
    - shall pay one-half (1/2) of the cost of the work on the crossing and the remainder shall be included in the cost of the work on the drain.
What are some unique aspects of regulated drains? Continued 2

- **IC 36-9-27-48**
  - (c) If the board finds that the relocation of a pipeline, cable, or similar equipment owned by a public utility is necessary in the construction or reconstruction of a regulated drain, the cost of relocation shall be paid by the public utility.

- **IC 36-9-27-33**
  - The county surveyor, the board, or an authorized representative of the surveyor or the board acting under this chapter has the right of entry over and upon land lying within seventy-five (75) feet of any regulated drain. The seventy-five (75) foot limit shall be measured at right angles to:
    - (1) the center line of any tiled drain; and
    - (2) the top edge of each bank of an open drain; as determined by the surveyor.
Summary of Needs for Working with Regulated Drains

- Information - Research
- Information - Talk with local authorities
- Information - Site visit(s)
- Information - Make sure you have a good survey
  - ***You may need to be present at the time of the survey
- Information - Determine if further research is needed
- Get constituent buy-in on project
- Early coordination with permitting authorities
- Don’t settle for “easy” hydraulic analysis
  - Review the research determine what is an acceptable level of care. Each project is different.
Question?