NEWAYGO COUNTY ROAD COMMISSION

CULVERT INVENTORY HISTORY

Newaygo County was named after

Chippewa Indian Chief – Naw-wa-goo

Large area:
24 miles x 36 miles

Responsible for nearly 1,600 miles of road.

SOME FUN FACTS ABOUT NEWAYGO COUNTY

- Home of The Hardy Dam and it is the is the largest earthen dam east of the Mississippi

- Over half of Newaygo County is in the Manistee National Forest
- We have more than 230 natural lakes
- The combined total of all the rivers and streams is longer than 350 miles.
- Also home of the Gerber Baby and Gerber Baby Foods

N.C.R.C. – STAFF

- Managing Director & Assistant Manager
- Office Staff
  - Office Manager
  - Payroll/HR
  - Admin. Assist./Accounts Payable
- Engineering Technician
- Mechanics (5), Heavy Equipment Operators (11), General Laborers/Drivers (16)
- Sign Man
- Foremen
  - Operational Superintendent
  - **2 Construction Foreman**
  - 2 Maintenance Foreman

SPECIAL PROJECTS SUPERVISOR

- Approximately 7 years ago we created a new position

- This added another Foreman to our Supervisory Staff
  - We needed additional supervision during winter months
  - Mainly this position was to help with the increased construction projects we call "special projects"
    - Drain Commission Work
    - Work for City's, Local Schools, ect.
    - USFS projects

- The Special Projects Supervisor was also put in charged of Culverts. His crew would change culverts that needed to be change before road projects started

- The Crew was also in charge or fixing failed culverts

SPECIAL OPS….

SPECIAL PROJECTS SUPERVISOR

- Eventually through employee attrition (retirement) our new Special Projects Supervisor was from the GEN-X / Millennial Generation

- Obviously he was a lot more handy with electronic devices.

- So he was also then put in charge of our culvert inventory
  - Up until then, it was being done… but it also wasn't… (which I will get into the next few slides)

- Inventory of culverts into the Roadsoft LDC (laptop version) started in February of 2017.

- All foreman at that time also had a laptop for our tracking our trucks through our GIS System – very useful during winter time

- In 2018/2019 we transitioned over to the IPADS for GIS Tracking of the Trucks

- We also eventually transitioned over to use the IPAD and the Roadsoft APP for our Culvert inventory in 2019.

NCRC HISTORY OF CULVERT INVENTORY

- In 2002 NCRC hired GVSU Annis Water Resources Institute (AWRI) to collect culvert data and develop a database to manage the information. Previous to that date, NCRC applied for funding in 2000 and received approval.

- The goals of this plan would be to inventory and catalogue culverts connected to streams or stream crossings and acquire information about the site to determine current and possible future pollution related impacts those crossings would have on the surface waters in Newaygo County.

- The information once compiled was also planned to be used as evidence to apply for a variety of different types of funding to aid in repairs to road/stream crossings

NCRC HISTORY OF CULVERT INVENTORY

- Through available GIS data AWRI estimated there were approx. 925 of these stream crossings that existed in Newaygo County
- NCRC requested that AWRI inventory and catalogue all crossings within our jurisdiction, regardless of size. So this took into account crossings that weren't connected to any streams or drain crossings. So, the aprox # inventoried was 1300,
- The primary goal of inventory fieldwork was to end up with data pertinent to the physical setting of the culverts, and the structural conditions represented at each road and stream crossing
- Digital data, photographs, site drawings, and the GPS position in a digital database furnished by AWRI.

NCRC HISTORY OF CULVERT INVENTORY

- AWRI converted all the inventory data into a digital product for use in a Decision Support System (DDS) or ArcView GIS which is a geographic information mapping program that allowed NCRC to analyze inventory data.
- The inventory project started in 2002 and completed in 2003/2004.
- Updates to any road crossing inventory from that time was done by NCRC Staff and any new road crossing sites would be inventoried as well.

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NEWAYGO COUNTY ROAD COMMISSION

Newaygo County
Road/Stream Crossing Update F...

Date: 8-11-14 Collected By: Lee

LOCATION

497.19 JOB # 122 Sub Acct (example: Dayton Township, Section 13, Site 2 = Day 1302)

Township: Garfield Town: 12N Range: 13W Section #: 5/6

Road Name: S Croswell Location: 125' south of M82

Stream Name: Crossroad culvert Item # 54' of 12" CMP

GPS File Name: Long. -85.899994 Item #: 1- 12 BAND
Lat. 43.423294

Site ID#: _____ Item #: 1- 7' post

ROAD DATA

Road Surface: (Gravel) / Pavement / Sand / Sand & Gravel

Maintenance: Seasonal / (Year Round)

Roadway Width:_____ ft (exclude shoulders) Shoulder Width DS:_____ ft Shoulder Width US:_____ ft Roadbed Width:_____ ft (include shoulders)

Curb: Y / (N) Width:_____ in

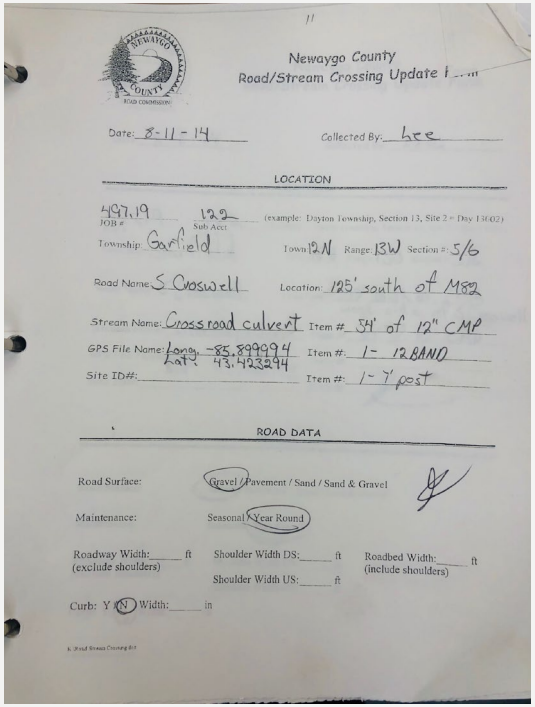
K:\Road Stream Crossing.doc

- The Road Stream crossing form was used to update any new culverts that were added to our system, and to keep track of any replacements or improvements.

- This form was used by our engineer to update the spreadsheet that tied in the Arc GIS 3.3 Database. So once the spreadsheet was updated, the culvert data base was updated.

- The problem we eventually had was over time the Arc GIS Software had quite a few updates and it wasn't a priority to the Road Commission to upgrade at that time.

- Eventually, the spreadsheets weren't linking to the database. So we had a years of these Culvert Inventory Sheets.



Newaygo County
Road/Stream Crossing Update f...

Date: 8-11-14 Collected By: Lee

LOCATION

497.19 JOB # 122 Sub Acct (example: Dayton Township, Section 13, Site 2 = Day 13-02)

Township: Garfield Town 12N Range: 13W Section #: 5/6

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Stream Name: Cross road culvert Item #: 54' of 12" CMP

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Site ID#: Item #: 1- 7' post

ROAD DATA

Road Surface: (Gravel) / Pavement / Sand / Sand & Gravel

Maintenance: Seasonal / (Year Round)

Roadway Width: ft (exclude shoulders) Shoulder Width DS: ft Shoulder Width US: ft Roadbed Width: ft (include shoulders)

Curb: Y (N) Width: in

FAST FORWARD TO 2019

- We started inventory our culvert in Roadsoft like I previously mentioned, using a laptop out in the field using a GPS attachment to the laptop.

- Only new culverts or existing culverts that needed to be replaced were being Inventoried at the time in Roadsoft.

- Due to the talk of the Asset Management Plan's we needed to created down the road we felt that it would be a good idea to get all of our culverts into Roadsoft as well.

- **Plus remember – we had years of culverts that weren't inventoried in any system. We had 2 huge three-ring binders of those culvert inventory sheets that sat in an office.**

- We hired a college intern the fall of 2019 and he took the laptop and the three rings binders and went all around the county entering them into Roadsoft

FAST FORWARD TO 2019

- With the help of Roadsoft staff working with our engineer they were able to get our previously inventoried culverts form the outdated Arc GIS system and imported in Roadsoft as well.
- Currently the Special Ops Foreman uses the IPAD at each location his crew is working at, fixing, updating or installing a new culvert to inventory and get the information in Roadsoft.
- With the GPS coordinates he can very easily locate where an existing culvert is and add any notes or details regarding what was done.
- One he gets in the office he uploads it to the cloud and then we grab it from the cloud and put into Roadsoft.

BENEFITS OF CULVERT INVENTORY

- We can easily see where the culvert location is on the Roadsoft map because it's GPS located. This helps definitely during winter months when they are covered by snow and we happened to have a water issue over the road.

- If we have an area that started to flood during summer months, or maybe a stream crossing or lake levels that are fluctuating more than past history shows, it's easy for the Foreman to pull up Roadsoft and check surrounding culverts and see what change we might have recently made.
  - Did we increased, decrease a surrounding area culvert or driveway culvert, ect.

- We can also easily see the type, size, age and service life of the past culverts

Questions