Small Structure/Culvert Asset Management

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1

Background Information

- Two summer interns every 3 years
- Approximately 1926 small structures/culverts
  - Averaged 75 culvert inspections per day
- Includes approach culverts and roadway culverts
- Data is collected using ESRI Field Maps app on iPad
  - Data links to County GIS Map

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2

Culvert Inspection and Data Collection

Attributes:
- Material
  - Corrugated Metal, Concrete, Fiberglass Cure in Place, High Density Polyethylene etc.
- Shape
  - Circular, arch, rectangle
- Diameter/Size
- End Treatment
- Condition
  - 1-Excellent, 2-Satisfactory, 3-Poor, 4-Critical, 5-Failed
- Sightline

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3

Culvert Inspection and Data Collection

Attributes Continued:
- Sediment Blockage (%)
- Center Line Relation
- Roadway Defects
- Erosion Scour
- Depth of Cover
- Object Marker needed?
- Ditch Cleanout needed?
- County Road Number
- Mile Marker
- Date Inspected
- Comments
- Pictures

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4

Condition Scale

- Rating may vary based on inspector
- General guidelines:

RATING SCALE AND ASSOCIATED ACTION

	1 GOOD	2 FAIR	3 POOR	4 CRITICAL	5 FAILED
CONDITION	Like new, with little or no deterioration, structurally sound and functionally adequate.	Some deterioration, but structurally sound and functionally adequate.	Significant deterioration and/or functional inadequacy, requiring maintenance or repair.	Very poor conditions that indicate possible imminent failure which could threaten public safety.	Failed or non-functional condition.
ACTION INDICATED	No action is recommended. Note in inspection report only.	No immediate action is recommended, but more frequent inspection may be warranted. Maintenance personnel should be informed.	Team Leader (Inspector) evaluates need for corrective action and makes recommendation in inspection report.	Corrective action is required and urgent. Engineering evaluation is required to specify appropriate repair.	Emergency action is required to address public safety hazard. Roadway closure is typical.

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5

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5 – Failed Culverts

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4 - Critical   3 - Poor   2 - Satisfactory

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Roadway Defects

- Excellent:
  - No defects
- Satisfactory:
  - Minor perpendicular crack (<3/4")
  - Minor depression around top of pipe end/slope interface
- Poor:
  - Perpendicular crack (>3/4")
  - Minor dip in roadway above culvert
  - Holes in Shoulder

- Critical
  - Large dip in roadway
  - Holes in shoulder or within 2' of edge of shoulder on in-slope

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8

Slide 9

Erosion Scour

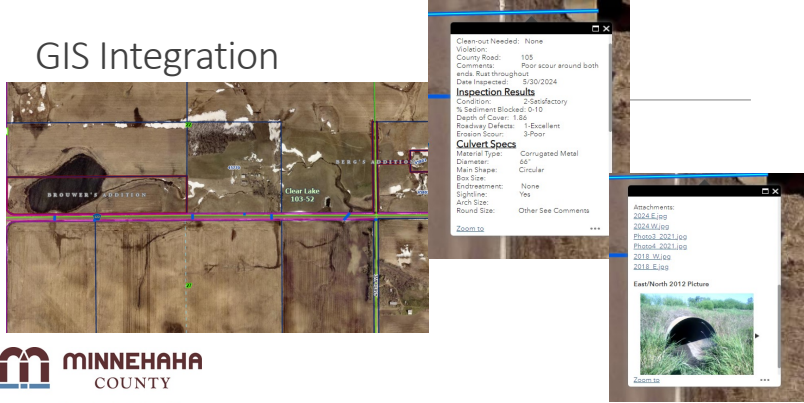- Excellent:
  - No scour present
  - All soils, rip-rap, slopes, and grasses are stable
- Satisfactory:
  - Up to a 3" hole(s) but grass around hole is stable
  - Rip-rap, if present, may be sloppy but functioning
  - Up to 1' deep sour hole at pipe end (outlet only) with no undermining
- Poor:
  - Hole(s) around pipe or end that appear to be active and growing
  - Undermining of pipe end(s)

- Rip-rap, if present, is not protecting pipe ends
- Joint separation starting due to undermining/scour
- Critical
  - Scour holes are large and expanding
  - Rip-rap, if present, is all but gone and serving no purpose
  - Integrity of the pipe is in question due to undermining/scour
  - Scour holes in roadbed or shoulder
  - Large and multiple joint separations

9

Slide 10

GIS Integration

10

Slide 11

Thank You!

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11